

AGENCY USE ONLY

PERMIT NO.:

MTG-010156

Date Rec'd.:

11/4/13

Amount Rec'd.:

\$600

Check No.:

✓ #4392

Rec'd By:

ky



Montana Department of

**ENVIRONMENTAL QUALITY**

WATER PROTECTION BUREAU

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DEQ/WPB  
REGULATORY & COMPLIANCE DIV.

FORM  
NOI

**Notice of Intent (NOI) for Montana Pollution Discharge Elimination System Application for New and Existing Concentrated Animal Feeding Operations**

The Application form is to be completed by the owner or operator of a Concentrated Animal Feeding Operation (CAFO) or Aquatic Animal Production Facility. Please read the attached instructions before completing this form. You must print or type legibly; forms that are not legible or are not complete will be returned. You must maintain a copy of the completed application form for your records.

**Section A - Application Status (Check one):**

- ☐ New No prior application submitted for this site.  
☐ Resubmitted Permit Number: MTG \_\_\_\_\_  
☒ Renewal Permit Number: MTG 0 1 0 1 5 6  
☐ Modification Permit Number: MTG \_\_\_\_\_

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11/4/13

**Section B - Facility or Site Information (See instruction sheet.):**

Site Name Golden Valley Colony

Site Location 100 Golden Valley Lane

Nearest City or Town Rygate

County Golden Valley

Latitude 46.25821

Longitude 109.27369

Date Facility began operation? April 26, 1978

Is this facility or site located on Indian Lands? ☐ Yes ☒ No

**Section C - Applicant (Owner/Operator) Information:**

Owner or Operator Name Rueben J. Kleinsasser

Mailing Address 100 Golden Valley Lane

City, State, and Zip Code Rygate, MT 59274

Phone Number (406) 5682210

Is the person listed above the owner? ☒ Yes ☐ No

Status of Applicant (Check one) ☐ Federal ☐ State ☒ Private ☐ Public ☐ Other (specify) \_\_\_\_\_

**Section D - Existing or Pending Permits, Certifications, or Approvals:** ☐ None

☒ MPDES MTG 010156 ☐ RCRA \_\_\_\_\_  
☐ PSD (Air Emissions) \_\_\_\_\_ ☐ Other \_\_\_\_\_  
☐ 404 Permit (dredge & fill) \_\_\_\_\_ ☐ Other \_\_\_\_\_

**Section E - Standard Industrial Classification (SIC) Codes:**

Provide at least one SIC code which best reflects the activity of project described in Section H.

Code	A. Primary	Code	B. Second
1	213 Hogs	2	212 Dairy Cows
Code	C. Third	Code	D. Fourth
3	251 Broilers	3	252 Chicken Eggs

**Section F - Facility or Site Contact Person/Position:**Name and Title, or Position Title Rueben J. KleinsasserMailing Address 100 Golden Valley LaneCity, State, and Zip Code Ryegate, MT 59074Phone Number (406)568-2210**Section G - Receiving Surface Waters(s):**

Outfall/Discharge Locations: For each outfall, List latitude and longitude to the nearest second and the name of the receiving waters

Outfall Number	Latitude	Longitude	Receiving Surface Waters
001	46.25729	109.26987	Rock Creek
002			
003			
004			
005			

Map: Attach a topographic map extending one mile beyond the property boundaries or the site activity identified in Section B depicting the facility or activity boundaries, major drainage patterns, and the receiving surface waters, stated above. Also identify the specific location of the production area, and land application area(s).

Is the receiving water on the 303(d) list for nutrients (nitrogen and/or phosphorus) ☐ Yes ☒ No

## Section H – Concentration Animal Feeding Operation Characteristics

### Waste Production, Storage and Disposal

	Animal type	Number in Open Confinement	Number Housed Under Roof
<input checked="" type="checkbox"/>	Mature Dairy Cows	100	
<input checked="" type="checkbox"/>	Dairy Heifers	40	
<input checked="" type="checkbox"/>	Veal Calves	90	
<input checked="" type="checkbox"/>	Cattle (not dairy or veal)	80	
<input checked="" type="checkbox"/>	Swine (55 lbs or over)	410	
<input type="checkbox"/>	Swine (55 lbs or under)	3200	
<input type="checkbox"/>	Horses		
<input type="checkbox"/>	Sheep or Lambs		
<input checked="" type="checkbox"/>	Turkeys		2500
<input checked="" type="checkbox"/>	Chickens (broilers)		10000
<input checked="" type="checkbox"/>	Chickens (layers)		18000
<input checked="" type="checkbox"/>	Ducks		800
<input checked="" type="checkbox"/>	Other (Specify: pullets )		9000
<input checked="" type="checkbox"/>	Other (Specify: Bulls )	4	
<input type="checkbox"/>	Other (Specify: )		

#### Manure, Litter and/or Wastewater Production and Use.

How much manure, litter, and process wastewater is generated annually by the facility?

Solid (tons): 4030 Liquid/Slurry (gallons): 4000000

If land applied, how many acres of land under control of the permit applicant are available to apply the manure, litter, or process wastewater generated from the facility? (Note: Do not include setback distances in available acreage)

4500 Acres

How much manure, litter, and process wastewater is transferred to other persons per year? (estimated) Solid (tons): N/A Liquid/Slurry (gallons): N/A

Were the containment structures built after February 2006?

- ☐ Do the waste containment structures have 10 feet of separation between the pond bottom and any bedrock formations?
- ☐ Do the waste containment structures have 4 feet of separation from the pond bottom and any ground water?
- ☐ Were any of the waste containment structures built within 500 feet of any existing well?

Type of Containment/Storage	Total Capacity	Units (gallons or tons)	Days of Storage
<input type="checkbox"/> Anaerobic Lagoon			
<input checked="" type="checkbox"/> Storage Pond #1	800000	Gallons	180
<input checked="" type="checkbox"/> Storage Pond #2	557000	Gallons	180
<input checked="" type="checkbox"/> Storage Pond #3	800000	Gallons	180
<input checked="" type="checkbox"/> Storage Pond #4	2290000	Gallons	180
<input type="checkbox"/> Storage Pond #5			
<input type="checkbox"/> Above Ground Storage Tank			
<input type="checkbox"/> Below Ground Storage Tank #1			
<input type="checkbox"/> Below Ground Storage Tank #2			
<input type="checkbox"/> Underfloor Pits			
<input type="checkbox"/> Roofed Storage Shed			
<input checked="" type="checkbox"/> Concrete Pad	252000	Cubic Feet	180
<input checked="" type="checkbox"/> Impervious Soil Pad	397000	Cubic Feet	180
<input type="checkbox"/> Other (Specify: _____)			
<input type="checkbox"/> Other (Specify: _____)			

### Physical Data for CAFO

#### Nutrient Management Plan

All Concentrated Animal Feeding Operations seeking permit coverage after July 31, 2007 are required to complete and implement a Nutrient Management (NMP). The NMP must be submitted to the Department using the form provided by the Department (Form NMP). Check the box below that applies and provide the required information. The NMP must be developed in accordance with ARM 17.30.1334 and implemented upon the effective date of permit coverage. (Check One)

☒ Does the facility have an NMP?

Date NMP was developed: 2009

Date NMP was last modified: \_\_\_\_\_

☐ NMP has not been prepared; provide detailed explanation below

### Section I – Supplemental Information



**Section J - CERTIFICATION****Permittee Information:**

This Form NMP must be completed, signed, and certified as follows:

- For a corporation, by a principal officer of at least the level of vice president;
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- For a municipality, state, federal, or other public facility, by either a principal executive officer or ranking elected official.

**All Permittees Must Complete the Following Certification:**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information; including the possibility of fine and imprisonment for knowing violations. [75-5-633, MCA]

**A. Name (Type or Print)**

Jacob J Wipf

**B. Title (Type or Print)**

Farm boss

**C. Phone No.**

14065682210

**D. Signature**

Jacob J Wipf for Golden Valley Co. Inc.

**E. Date Signed**

10/28/13

The Department will not process this form until all of the requested information is supplied, and the appropriate fees are paid. Return this form (NOI) and the applicable fee to:

Department of Environmental Quality  
Water Protection Bureau  
PO Box 200901  
Helena, MT 59620-0901  
(406) 444-3080

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PERMITTING & COMPLIANCE DIV.

# Form NOI – Application for New and Existing Concentrated Animal Feeding Operations and Aquatic Animal Production Facilities

**Important:** Do not use this form to transfer permit coverage to a new owner or operator, you must use Form PTN. You must provide the information requested for this application to be complete. Responses must be self-explanatory and must not refer exclusively to attached maps, plans or documents. The appropriate fees must accompany this Form NOI. Mail this to the DEQ address stated on the form. You must maintain a copy of the completed form for your records. CAFO General Permit and the Fish Farm General Permit documents and related forms are available at (406) 444-3080 or on the DEQ website at: <http://www.deq.mt.gov>.

Please type or print legibly; applications that are not legible or are not complete will be rejected.

## SPECIFIC ITEM INSTRUCTIONS

### *Section A – Application Status*

Check the box that applies and provide the requested information. If Form NOI has not been previously submitted for this site, check the first box (New). DEQ will assign a permit number when the form is submitted. The permit number is a 9-digit code beginning with MTG010. If you submitted a Form NOI and DEQ deemed the application deficient or incomplete, check the second box (Resubmitted); If you were notified by DEQ that the permit coverage expired or will expire and you are now submitting an NOI to continue coverage check the third box (Renewal); if there is a change in the facility information (Section H or Section I), check the last box (Modification). If a NOI has been submitted and deemed deficient then the permit number will appear in the deficiency letter. If the site is covered under the *General Permit for Concentrated Animal Feeding Operations* or the *General Permit for Fish farms*, the number is given on the Authorization letter sent to you by DEQ. The permit number must be included on any correspondence with DEQ regarding this site.

### *Section B – Facility Information:*

Identify the legal name of the facility that is subject to permit coverage. The facility is the land or property where the facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity. Give the address or location of this facility and the geographical information. The location may be the physical mailing address or description of how the facility may be accessed. (PO Boxes are not acceptable.) Latitude and longitude must be accurate to the nearest second. Sources include GPS, a USGS topographic map, and/or "Topofinder" from <http://nris.mt.gov/interactive.asp>.

### *Section C – Applicant (Owner/Operator) Information:*

Give the name, as it is legally referred to, of the person, business, public organization, or other entity that owns, operates, controls or supervises the facility described in Section B of this Form. The operator is the legal entity which controls the facility operation. The permit will be issued to the entity identified in this section (Section C). The owner or operator assumes all liability for discharges of the facility and compliance with the permit. If the owner or operator is other than a person or government entity it must be registered with the Montana Secretary of State's office.

### *Section D – Existing or Pending Permits, Certification, or Approvals:*

List, in descending order of significance, the four digit standard industrial codes that best describe the activities at this facility. Also, provide a brief description in the space provided. A complete list of SIC Codes (and conversion form the newer North American Industry Classification System (NAICS)) can be obtained from the Internet at <http://www.census.gov/epcd/www/naics.html> or in paper from the document entitled "Standard Industrial Classification Manual", Office Management and Budget, 1987. SIC Code listings may also be found at <http://www.osha.gov/pls/imis/sicsearch.html>. At least one SIC code must be provided. See attached table for common SIC codes.

### *Section F – Facility Contact Person/Position:*

Give the name, title, and work phone number of a person who is thoroughly familiar with the operation of the facility and the facts reported in this form, and who can be contacted by DEQ for additional information. Those facilities with periodic changes in the contact person may provide the contact person's position instead of a person's name.

### ***Section G – Receiving Surface Water(s):***

An outfall location is considered to be a discrete channel, conveyance, structure, or flow path from which the discharge leaves the boundary of the facility and/or enters surface water. "Surface waters" is defined in ARM 17.30.1102(32) as any waters on the earth's surface including, but not limited to, streams, lakes, ponds, reservoir, or other surface water including ephemeral and intermittent drainage ways and irrigation systems. Water bodies used solely for treating, transporting, or impounding pollutants shall not be considered surface water. Provide the following information in the table on the application form:

1. Assign a number to each outfall starting with 001. If the outfall is not well defined, assign the outfall number to the drainage area. For existing permittees, ensure outfall numbers used are consistent with those identified in the past for the same outfall.
2. Latitude/longitude can be derived from USGS 7.5 minute topographic map and/or "Topofinder" at <http://nris.mt.gov/interactive.html>. Latitude and longitude must be accurate to the nearest second.
3. Give the name of the surface waters that receive the discharge. If the discharge reports to a municipal storm sewer, please indicate so.
4. Please attach a USGS topographic map(s) indicating the boundary of your facility, major drainage patterns, and the receiving surface water(s).

The facility must check the CWAIC data base at <http://cwaic.mt.gov/> to determine if the receiving water is impaired for nutrient (nitrate and/or phosphorus).

### ***Section H – Concentrate Animal Feeding Operation Characteristics:***

#### **Waste Production, Storage and Disposal:**

Report the maximum number of each type of animal confined at any one time and the type of confinement structure used for each (e.g. open feedlot, under roof.)

#### **Manure, Litter, and/or Wastewater Production and Use:**

To *transfer waste* means to give away or sell waste to another person for disposal on land owned or controlled by someone other than the permit applicant.

The term "*storage pond*," includes, but is not limited to ponds, aerobic lagoons, evaporation ponds, manure holding cells, collection basins, settling basins, bermed or diked areas used for impounding waste, and temporary or seasonal waste holding ponds.

"*Production area*" means that part of an Animal Feeding Operation (AFO) that includes the animal confinement area, the manure storage area, the raw materials storage area, and the waste containment areas. The *animal confinement area* includes but is not limited to open lots, housed lots, feedlots, confinement houses, stall barns, free stall barns, milk rooms, milking centers, cow yards, barnyards, medication pens, walkers, animal walkways, and stables. The *manure storage area* includes but is not limited to lagoons, runoff ponds, storage sheds, stockpiles, under house or pit storage, liquid impoundments, static piles, and composting piles. The *raw materials storage area* includes but is not limited to feed silos, silage bunkers, and bedding materials. The *waste containment area* includes but not limited to settling basins, and areas within berms and diversion which separate uncontaminated storm water. Also include in the definition of production area is any egg washing or egg processing facility, and any area used in storage, handling, treatment, or disposal of mortalities.

"*Land application area*" means land under control of AFO owner or operator, whether it is owned, rented, or leased, to which manure, litter or process wastewater from the production area is or may be applied.

### ***Section I – Supplemental Information:***

Use the space provided to expand upon any information requested in the application or information you wish to bring to the attention of the reviewer. Attach additional sheets, if necessary. For applicants requesting a modification to an existing authorization or site-specific Nutrient Management Plan (aka Form NMP), provide and explanation of the requested modification.

# Common Standard Industrial Classification (SIC) Codes

Division	SIC	Industrial Activity Represented
Agriculture, Forestry and Fishing	211	Beef Cattle Feedlots
	212	Beef Cattle, Except Feedlots
	213	Hogs
	214	Sheep and Goats
	241	Dairy Farms
	251	Broiler, Fryer and Roaster Chickens
	252	Chicken Eggs
	253	Turkeys and Turkey Eggs
	254	Poultry hatcheries
	259	Poultry and Eggs, not elsewhere classified (Ducks)
	272	Horses and other Equines
	921	Fish Hatcheries and Preserves
Mining	1021	Copper Ores
	1031	Lead and Zinc
	1044	Silver Ores
	1041	Gold Ores
	1221	Bituminous Coal and Lignite Surface Mining
	1311	Crud Petroleum and Natural Gas
	1442	Construction Sand and Gravel
Construction	1521	General Contractor - Single Family Houses
	1522	General Contractor - Residential Bldgs. Other Than Single Family
	1542	General Contractor - Nonresidential Buildings, Other than Industrial Buildings and Warehouses
	1611	Highway and Street Construction, Except Elevated Highways
	1622	Bridge, Tunnel, and Elevated Highway construction
	1623	Water, Sewer, Pipeline, communications & Power Line Construction
	1629	Heavy construction, Not Elsewhere Classified
	1794	Excavation Work
Manufacturing	7349	Building Cleaning and Maintenance Services, Not Elsewhere
	2011	Meat Packing Plants
	2063	Beet Sugar
	2421	Sawmills and Planing Mills, General
	2611	Pulp Mills
	2911	Petroleum Refining
	3241	Cement, Hydraulic
Transportation, Communications, Electric, Gas and Sanitary Services	4911	Electric Services
	4941	Water Supply
	4952	Sewerage Systems
	4953	Refuse Systems
Wholesale Trade	5093	Scrap and Waste Materials
	5154	Livestock
	5171	Petroleum Bulk Stations and Terminals
Retail Trade	5541	Gasoline Service Station
	5984	Liquefied Petroleum Gas (Bottled Gas) Dealers
Services	7011	Hotels and Motels
	7033	Recreational Vehicle Parks and Campsites
	7542	Carwashes
Public Administration	9224	Fire Protection
	9711	National Security

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QWPB  
PERMITTING & COMPLIANCE DIV.

FORM  
NMP

## Nutrient Management Plan

**READ THIS BEFORE COMPLETING FORM:** Before completing this form (Form NMP), Concentrated Animal Feeding Operation (CAFO) operators need to read the General Permit, particularly Part IV.A. CAFO operators also need to read the "Instructions For filling out Form NMP," found at the back of this form. Form NMP is intended to help CAFO operators develop a site-specific Nutrient Management Plan, in compliance with Part IV.A of the General Permit and all applicable State rules and statutes. Your Nutrient Management Plan must be maintained at the site as required in Part III of the General Permit. Sections B and C on your Form NMP must state the information exactly the same way as it was stated on the most recently submitted version of your NOI-CAFO. Attach additional pages as necessary, indicating the corresponding section number on this NMP form. The 2013 General Permit, current fee schedule, and related forms are available from the Water Protection Bureau at (406) 444-3080 or <http://www.deq.mt.gov/wqinfo/MPDES/CAFO.asp>

### Section A – NMP Status:

- ☐ New No prior NMP submitted for this site.
- ☐ Resubmitted Previous NMP found incomplete.
- ☐ Modification Change or update to existing NMP.
- ☒ New 2013 New 2013 version of NMP.

COPY

### Section B – Facility Information:

Facility Name Golden Valley Colony

Facility Location 100 Golden Valley Lane

Nearest City or Town Ryegate County Golden Valley

### Section C – Applicant (Owner/Operator Information):

Owner or Operator Name Rueben J. Kleinsasser

Mailing Address 100 Golden Valley Lane

City, State, and Zip code Ryegate, MT 59274

Facility Phone Number (406)568-2210

Email NONE

**Section D – NMP Minimum Elements:**

1. Livestock Statistics		
Animal Type and number of animals	# of Days on Site (per year)	Annual Manure Production (tons, cu. yds. or gal
1. See attachment	See attachment	See attachment
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Method used for estimating annual manure production:

NRCS- Manure Management Planner Tool

Measure ponds liquid, and weigh manure trucks.

The total pond volume is increased by dirty water runoff from the coral.

See attachment for Complete list of Animals

Total annual manure production: 4,000,000 gallons.

**2. Manure Handling**

a. Describe Manure handling at the facility:

See attached

b. Frequency of Manure Removal from confinement areas:

See Attached

c. Is this manure temporarily stored in any location other than the confinement area? ☒ Yes ☐ No

If so then how and where?

Lagoons are used to separate solids and liquids. Hog Manure is separated then flushed to stage 1. Dairy Manure is hauled to compost pad. Poultry manure is stored on compost pile when fields are frozen.

d. Is manure stored on impervious surface? ☒ Yes ☐ No

If yes, describe type and characteristics of this surface:

Lagoons are compacted clay. Two monitoring wells are located adjacent to lagoons and sampled annually with results sent to DEQ (see map for location). Temporary dairy pile is compacted clay surface. Rest of surfaces are also compacted clay surfaces.

Animal Type and Number of animals	# of days on site (per Year)	Annual Manure Production
Chickens- Layers -18000	365	318 Tons and 200000 Gallons
Pullets- 9000	365	78 Tons
Broilers- 10000	56	4 Tons
Turkeys- 2500	140	34 Tons
Ducks- 800	85	2 Tons
Dairy- Milkers & Dry- 110	365	3126 tons and 550000
Heifers- 40	180	250 Tons
Calves- 90	365	78 Tons
Bulls- 4	14	132 Tons
Beef- 50	365	8 Tons
Hogs- Sows- 390	365	1503000 Gallons
Boars- 20	365	10000 Gallons
Wieners- 1250	365	133000 Gallons
Finishers- 1950	365	1282000 Gallons

## **2. Manure Handling**

### **A. Describe Manure Handling at the Facility:**

Hog barns-under- barn pits. When full, pumped to separator, liquids flow to stage 1; solids placed on compost pad. Poultry barn & chicken barn litter is hauled directly to fields. If ground is frozen manure is hauled to compost pile. Dairy Manure is stacked on dairy pad, and then hauled to compost pad. Dairy Corral is scraped & placed on compost pile. Beef pen manure is scraped and hauled from pens directly to fields. Turkey and duck manure is stacked in compost pile and hauled directly to fields. Water from Stage 1 settles out solid, then flows to stage 2, then to stage 3, then to stage 4. Stage 2 waste is recycled and used in Hog barn.

### **B. Frequency of Manure Removal from confinement areas:**

Hog barn pits are flushed every day. Dairy barn is scraped daily and hauled to dairy pad. When pad is full it is hauled to compost pad (every 7-14 days). Compost pad is hauled to fields 1-2 times a year. Beef pens are scraped annually. Lagoons are emptied annually. Poultry manure is removed after each set (up to 6 times a year) and hauled to fields directly, if fields are frozen it is hauled to stack pad.

**Land Application Equipment Calibration** Describe the type of equipment used to land apply wastes and the calibration procedures:

Waste water is injected into fields. Compost pile/pad is hauled to fields on non-frozen ground dry spreader-broadcast, incorporated. Poultry manure is applied via dry spreader. Dairy and hog manure is hauled to field and broadcast with spreader. Calibration is completed annually via NRCS procedures.



3. Waste Control Structures					
Waste Control Structures (name/type)	Length (ft.)	Width (ft.)	Depth (ft.)	Volume (cubic ft. or gallons)	Number of days of storage
1. Stage 1 Lagoon	123	142	12	800000	180
2. Stage 2 Lagoon	140	200	6	557000	180
3. Stage 3 Lagoon	300	200	6	800000	180
4. Stage 4 Lagoon	222	230	6	2290000	180
5. Compost Pile/pad	270	150	6	243000	180
6. Dairy Pad	85	25	6	12750	180
7. Poultry Pad	50	30	6	9000	180
8. Beef Pens	700	110	2	154000	180
9.					
10.					
11.					
12.					

What is the 24 hr. 25 yr. storm event at this facility 2.6

Production area: 20 acres. Type of lot (dirt or paved): Dirt & Concrete

Area contributing drainage from outside CAFO that enters confinement areas and waste storage, conveyance, or treatment structures: 0 acres.

What is the annual precipitation during the critical storage period 5 inches

How much freeboard do the pond(s) have 1 foot

#### 4. Disposal of Dead Animals.

Describe how dead animals are disposed of at this facility:

Hogs and Dairy mortalities are placed into compost pile and allowed to digest. Poultry mortalities are buried east of poultry barns. (see map)

## **5. Clean Water Diversion Practices**

**Describe how clean water is diverted from production area:**

Clean water is diverted away from dairy corrals and around compost pile into filter strip east of lagoons. Dirty water from dairy corral is diverted to stage 2 (stage 2 is filtered and recycled for use in dairy barn). Beef pens contain a raised berm all along the east side of pens keeping water contained. all leaks are fixed right away.

## **6. Prohibiting Animals and Wastes from Contact with State Waters**

**Describe how animals and wastes are prohibited from direct contact with state waters:**

Animals are either totally confined or fenced away from any state waters located near the facility. All watering is completed in corrals or in-barns.

**Describe how Chemicals and other contaminants are handled on-site:**

No Chemicals are housed on site.

## **7. Best Management Practice (BMPS)**

Describe in detail all temporary, permanent and structural BMPS which will be used to control runoff of pollutants from facility's production area. Indicate the location of these measures. If BMPS are not installed include a schedule for implementation of each of these measures. Examples of BMP measures could include but are not limited to: constructing ditches, terraces, and waterways above and open lot to divert clean water run on; installing gutters, downspouts and buried conduits to divert roof drainage; providing more roofed area; decreasing open lot surface area; repairing or adjusting water systems to minimize water wastage; using practical amounts of water for cooling purposes; recycling water if practical and applicable.

**Production Area BMP's**

Ponds are compacted clay and all leaks are fixed right away.

Describe in detail all temporary, permanent and structural Best Management Practices (BMPs) which will be used to control runoff of pollutants from facility's land production area. Indicate the location of these practices. If not already in use, include a schedule for implementation of each of these measures. Attached details and specifications may be used to supplement this description. Examples of BMP measures could include but are not limited to: maintaining setbacks from surface waters for manure applications; managing irrigation practices to prevent ponding of wastewater on land application sites;

never spray irrigating waste on to frozen ground: consulting with the Department prior to applying any liquid waste to frozen or snow-covered ground; applying wastes at agronomic rates.

**Land Application BMP's**

Soil and manure are tested annually. Manure is not spread within 100 ft of residences and wells, not within 25 ft of ditches, and areas of concern are monitored. Equipment is calibrated prior to spreading. manure is not applied to frozen soils.

Buffers ☐ Yes ☐ No

Conservation Tillage ☒ Yes ☐ No

Constructed Wetlands ☐ Yes ☐ No

Grass Filter ☒ Yes ☐ No

Infiltration Field ☐ Yes ☐ No

Residue Management ☐ Yes ☐ No

Set backs ☐ Yes ☐ No

Terrace ☐ Yes ☐ No

**Other examples**

Manure injection or incorporation, plant sampling/ tissue analysis.

**8. Implementation, Operation, Maintenance and Record Keeping – Guidance**

The permittee is required to develop guidance addressing implementation of NMP, proper operation and maintenance of the facility, and record keeping as described in Part 2 of the permit.

Has a guidance document been developed for the facility? ☒ Yes ☐ No

**Certify the document address the following requirements:**

Implementation of the NMP: ☒ Yes ☐ No

Facility operation and maintenance: ☒ Yes ☐ No

Record keeping and reporting ☒ Yes ☐ No

Sample collection and analysis: ☒ Yes ☐ No

Manure transfer ☐ Yes ☒ No

**Provide name, date and location of most recent documentation:**

February 2009- Developed with NRCS

**If your answer to any of the above question is no, provide explanation:**

No manure is transferred off site.

### **Section E – Land Application**

Will manure be land applied to land either owned, rented, or leased by the owner or operator of the facility?

- ☒ Yes If yes, then the information requested in Section E must be provided.  
☐ No If no, then provide an explanation of how animal waste at this facility are managed.

### **Photos and/or Maps**

Attach an aerial photograph or map of the site where manure is to be applied. (Use multiple photos/maps if necessary to show required details.) The photo(s)/map(s) must be printed on no larger than an 11"X 17" piece of paper, and must clearly identify the following items:

- Individual field boundaries for all planned land application areas
- A name, number, letter or other means of identifying each individual land application field
- The location of any downgradient surface waters.
- The location of any downgradient open tile line intake structures
- The location of any downgradient sinkholes
- The location of any downgradient agricultural well heads
- The location of all conduits to surface waters
- The specific manure/waste handling or nutrient management restrictions associated with each land application field
- The soil type(s) present and their locations within the individual land application field(s)
- The location of buffers and setbacks around state surface waters, well heads, etc.

### **Land Application Equipment Calibration**

Describe the type of equipment used to land apply wastes and the calibration procedures:

see attachment

### **Manure Sampling and Analysis Procedures**

A representative manure sample will be analyzed a minimum of once annually for Total Nitrogen, and Total Phosphorus. Analysis results will be reported in lbs/ton or lbs/1,000 gal. Results of these analyses will be used in determining rates for manure, litter, and process wastewater.

Manure Sample collection will occur according to ARM 17.30.1334

Other (describe)

NRCS methods described in literature, sent to certified lab.

### **Soil Sampling and Analysis Procedures**

Representative soil (composite) samples from the top 6 inches layer of soil for each field where manure will be applied must be analyzed for phosphorus content at least once every three years. Analyses will be conducted by a qualified laboratory, using the Olsen P test. Results will be reported in parts per million (ppm) and will be used in determining application rates for manure, litter, and process wastewater

Soil samples collection will occur according the methods in ARM 17.30.1334

Other (describe)

### **Phosphorus Risk Assessment**

The permittee shall assess the risk of phosphorus contamination of state waters. An assessment shall be conducted for each field, under the control of the operator, to which manure, litter or process wastewater will or

may be applied. If a new field is added in the future, then the permittee must submit a revised (modified) NMP. The permittee has the option of using Method A or Method B (below) to complete the assessment. Copies of all tables and calculations used to complete the assessments, as well as the results of the assessments, shall be submitted to the Department and copies shall be maintained on-site at the facility and available for Departmental review. The results of the assessments shall be used to determine the appropriate basis for land application of wastes from the facility.

#### Method Used

Indicate which method will be used to determine phosphorus application:

Method A – Representative Soil Sample

Method B – Phosphorus Index

#### Method A – Representative Soil Sample

- Obtain one or more representative soil sample(s) from the field per 17.30.1334
- Have the sample analyzed for Phosphorus by a qualified lab. The “Olsen P test” must be used for the analysis, and the result must be reported in parts per million (ppm)
- Using the results of the Olsen P test, determine application basis according to the Table below.

#### Soil Test

Olsen P Soil Test Results (ppm)	Application Basis
<25.0	Nitrogen Needs of Crop
25.1 - 100.0	Phosphorus Needs of Crop
100.0 – 150.0	Phosphorus Needs up to Crop Removal Rate
>150.0	No Application allowed

#### Method B – Phosphorus Index

- Complete a phosphorus Index according to the crop grown on each field. Complete table in Appendix A to calculate phosphorus index. For information on filling out specific sections in Appendix A, please refer to the method as described in Natural Resource Conservation Service (NRCS), Agronomy Technical Note MT-77 (rev3), January 2006.
- Using the calculated Total Phosphorus Index Value, assign the overall site/field vulnerability to phosphorus loss according to the table below.

#### Total Phosphorus

Total Phosphorus Index Value	Site Vulnerability to Phosphorus Loss
<11	Low
11-21	Medium
22-43	High
>43	Very High

- Using the calculated Site Vulnerability to Phosphorus Loss, determine the appropriate application basis according to the table below.

Site Vulnerability to Phosphorus Loss	Application Basis
Low	Nitrogen Needs
Medium	Nitrogen Needs
High	Phosphorus Need Up to Crop Removal
Very High	Phosphorus Crop Removal or No Application

The applicant has 2 ways in which to report how manure or process wastewater application rates can be reported to DEQ.

**1. Linear Approach.** Expresses rates of application as pounds of nitrogen and phosphorus. CAFOs selecting the linear approach to address rates of application must include in the NMP submitted to the permitting authority the following information for each crop, field, and year covered by the NMP, which will be used by the permitting authority to establish site-specific permit terms:

- The maximum application rate (pounds/acre/year of nitrogen and phosphorus) from manure, litter, and process wastewater.
- The outcome of the field-specific assessment of the potential for nitrogen and phosphorus transport from each field. [If a state does not have an N transport risk assessment, the NMP must document any basis for assuming that nitrogen will be fully used by crops.] The CAFO must specify any conservation practices used in calculating the risk rating.
- The crops to be planted or any other uses of a field such as pasture or fallow fields.
- The realistic annual yield goal for each crop or use identified for each field.
- The nitrogen and phosphorus recommendations from in ARM 17.30.1334 (technical standard) for each crop or use identified for each field.
- Credits for all residual nitrogen in each field that will be plant-available.
- Consideration of multi-year phosphorus application. For any field where nutrients are applied at a rate based on the crop phosphorus requirement, the NMP must account for single-year nutrient applications that supply more than the crop's annual phosphorus requirement.
- All other additions of plant available nitrogen and phosphorus (i.e., from sources other than manure, litter, or process wastewater or credits for residual nitrogen).
- The form and source of manure, litter, and process wastewater to be land-applied.
- The timing and method of land application. The NMP also must include storage capacities needed to ensure adequate storage that accommodates the timing indicated.
- The methodology that will be used to account for the amount of nitrogen and phosphorus in the manure, litter, and wastewater to be applied.
- Any other factors necessary to determine the maximum application rate identified in accordance with this Linear Approach.

**2. Narrative Rate Approach.** Expresses a narrative rate of application that results in the amount, in tons or gallons, of manure, litter, and process wastewater to be land applied. CAFOs selecting the narrative rate approach to address rates of application must include in the NMP submitted to the permitting authority the following information for each crop, field, and year covered by the NMP, which will be used by the permitting authority to establish site-specific permit terms:

- The maximum amounts of nitrogen and phosphorus that will be derived from all sources of nutrients (pounds/acre for each crop and field).
- The outcome of the field-specific assessment of the potential for nitrogen and phosphorus transport from each field. The CAFO must specify any conservation practices used in calculating the risk rating.
- The crops to be planted in each field or any other uses of a field such as pasture or fallow fields, including alternative crops if applicable. Any alternative crops included in the NMP must be listed by field, in addition to the crops identified in the planned crop rotation for that field.
- The realistic annual yield goal for each crop or use identified for each field for each year, including any alternative crops identified.
- The nitrogen and phosphorus recommendations from *[the permitting authority to specify acceptable sources]* for each crop or use identified for each field, including any alternative crops identified.
- The methodology (including formulas, sources of data, protocols for making determination, etc.) and actual data that will be used to account for: (1) the results of soil tests required by Parts II.A.4.b and III.A.3.g of this

permit, (2) credits for all nitrogen in the field that will be plant- available, (3) the amount of nitrogen and phosphorus in the manure, litter, and process wastewater to be applied, (4) consideration of multi-year phosphorus application (for any field where nutrients are applied at a rate based on the crop phosphorus requirement, the methodology must account for single-year nutrient applications that supply more than the crop's annual phosphorus requirement), (5) all other additions of plant available nitrogen and phosphorus to the field (i.e., from sources other than manure, litter, or process wastewater or credits for residual nitrogen), (6) timing and method of land application, and (7) volatilization of nitrogen and mineralization of organic nitrogen.

- Any other factors necessary to determine the amounts of nitrogen and phosphorus to be applied in accordance with the Narrative Rate Approach.

- NMPs using the Narrative Rate Approach must also include the following projections, which will not be used by the permitting authority in establishing site-specific permit terms:

- i. Planned crop rotations for each field for the period of permit coverage.

- ii. Projected amount of manure, litter, or process wastewater to be applied.

- iii. Projected credits for all nitrogen in the field that will be plant-available.

- iv. Consideration of multi-year phosphorus application.

- v. Accounting for other additions of plant-available nitrogen and phosphorus to the field.

- vi. The predicted form, source, and method of application of manure, litter, and process wastewater for each crop

- If the receiving water is on the 303(d) list for nutrients then the narrative rate approach must be used.

- a. For the Linear Approach the permittee will complete the Nutrient Budget Worksheet, below, for the next 5 years to which manure or process waste water is or may be applied. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

# Nutrient Budget Worksheet

Field identification:		Year:	Crop:		
Expected Crop Yield:					
Phosphorus index results or Phosphorus application from soil test:					
Method of Application:					
When will application occur:					
Nutrient Budget			Nitrogen-based Application	Phosphorus-based Application	Source of information
1		Crop Nutrient Needs, lbs/acre			
2	(-)	Credits from previous legume crops, lbs/ac			
3	(-)	Residuals from past manure production lbs/acre			
4	(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre			
5	(-)	Nutrients supplied in irrigation water, lbs/acre			
6		= <b>Additional Nutrients Needed, lbs/acre</b>			
7		Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1000 gal (from manure test)			
8	(x)	Nutrient Availability factor, for Phosphorus based application use 1.0			
9		= <b>Available Nutrients in Manure, lbs/ton or lbs/1000 gal</b>			
10		Additional Nutrients needed, lbs/acre (calculated above)			
11	(/)	Available Nutrients in Manure, lbs/ton or lbs/1000 gal (calculated above)			
12		= <b>Manure Application Rate, tons/acre or 1000 gal/acre</b>			

Comments:



**Section F - CERTIFICATION**

**Permittee Information:** This form must be completed, signed, and certified as follows:

- For a corporation, by a principal officer of at least the level of vice president;
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- For a municipality, state, federal, or other public facility, by either a principal executive officer or ranking elected official.

**All Permittees Must Complete the Following Certification:**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information; including the possibility of fine and imprisonment for knowing violations. [75-5-633, MCA]

**A. Name (Type or Print)**

Jacob J Wipf

**B. Title (Type or Print)**

Farm boss

**C. Phone No.**

406-882-2210

**D. Signature**

Jacob Gulipf for Golden Valley C&D Inc.

**E. Date Signed**

10-28-13

The Department will not process this form until all of the requested information is supplied, and the appropriate fees are paid. Return this form and the applicable fee to:

Department of Environmental Quality  
Water Protection Bureau  
PO Box 200901  
Helena, MT 59620-0901  
(406) 444-3080

RECEIVED  
NOV 04 2013  
DEQ/WPB  
PERMITTING & COMPLIANCE DIV.

# INSTRUCTION FOR Form NMP – Nutrient Management Plan Associated With Concentrated Animal Feeding Operations

You may need the following items in order to complete this form: A copy of your most recently submitted NOI-CAFO: United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), No. 80.1 Nutrient Management, Agronomy Technical Note MT-11 (revision 3), January 2006; Montana State University Extension Service Publication 161, Fertilizer Guidelines for Montana Crops; United States Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), Sampling Soils for Nutrient Management – Manure Resource, MT 04/07; Montana State University, Mont Guide, Interpretation of Soil Test Reports for Agriculture, MT200702AG, July, 2007; United States Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), Conservation Practice Standard, Code 590 (November 2006) and Waste Utilization, Code 633 (August 2000).

Please type or print legibly; forms that are not legible will be considered incomplete.

## SPECIFIC ITEM INSTRUCTIONS

### Section A – NMP Status:

Check the box that applies and provide the requested information. If the Form NMP has not been previously submitted for this site, check the first box (New). If you submitted a FORM NMP and the department found it to be incomplete, check the second box (Resubmitted);

If you were notified by the Department that the permit coverage expired and you are now submitting and updated Form NMP, check the third Box (Modification). If you have received a deficiency letter in regard to your NMP application the facilities assigned designation will be noted in the RE: line starting with MTG#####. If the site is covered under *the General Permit for Concentrated Animal Feeding Operation*, the number is given on the Authorization letter sent to you by the Department. The permit number must be included on any correspondence with the Department regarding this site.

### Section B – Facility Information:

The information must be stated exactly the same way as it was stated on the most recently submitted version of your form NOI-CAFO.

### Section C – Applicant (Owner/Operator) Information:

The information must be stated exactly the same way as it was stated on the most recently submitted version of your form NOI-CAFO.

### Section D – Waste Management Minimum Elements:

**1. Livestock Statistics:** Identify each type of animal confined at this facility. The definition of “type” could include animals of a given species, animals of a given weight class (e.g. piglets, sows), or animals housed for a specific purpose (e.g. dry cows, milking cows).

“number of days on site per year” means the number of days at least one animal of a given type is held in confinement during 12-month period.

“Annual manure production” means the volume of manure (from a given animal type) that is stored, land applied, or transferred to another person during any given 12-month period.

“Method used for estimating annual manure production.” When describing the method used to calculate annual manure production, include all formulas, factors, references to tables, and other resources used to calculate manure production. Be sure to account for soiled bedding materials and manure-contaminated runoff water, which is also consider manure under state regulations. For example on how to calculate manure production see <http://animalrangeextension.montana.edu/articles/natresourc/cnmp/nonprint/step2.htm>.

## 2. Manure Handling

Describe manure handling at the facility.

**3. Waste Control Structures.** List all waste control structures. These may include, but are not limited to, manure lagoons, manure ponds. Evaporation ponds, wastewater retention ponds, contaminated runoff retention ponds, settling basins, underground storage tanks, underfloor pits, manure solids stacking pads, vegetative treatment strips, composting facilities, and dry stack facilities. Berms, dikes, concrete curbs, ditches, and waste transfer pipelines are also waste control structures and must be listed; though some of the requested measurements may not apply (e.g. “column” usually does not apply to a waste transfer pipeline).

“25-year 24-hour rainfall event” means a precipitation event with a probable recurrence interval of once in 25 years as defined by the National Weather Service in Technical Paper Number 40, “Rainfall Frequency Atlas of the United States,” May 1961, and subsequent amendments, or the equivalent regional or state rainfall probability information developed therefrom.

“Critical Storage period” The minimum design volume for liquid manure storage structures is based on the expected length of time between emptying events that result in maximum production of process wastewater, including runoff from the production area. That period is the *critical storage period*. The critical storage period is considered to the 180 days starting November 1<sup>st</sup> to April 30.

**4. Disposal of Dead Animals.** Please be as specific as possible with the information that you provide. For example, if dead animals are disposed of by burial, the method/practice description should include the fact that they are buried, how quickly after death they are hauled to the burial site, and how quickly they are covered with soil and the depth of the soil cover over the animal. The method/practice location information should be detailed enough that an inspector can find the site without the need for additional guidance (e.g. latitude and longitude). It may not simply reference a map.

**5. Clean Water Diversion Practices,** The practice description does not need to be any more detailed than “berm”, “ditch”, grassy swale,” etc. The practice location may not simply reference a map.

**6. Prohibiting Animals & wastes from Contact with State Waters.** The practice description does not need to be any more detailed than “fence”, “wall”, etc. The practice location may not simply reference a map.

*Chemicals and Contaminants.* List all major chemicals or other contaminants handled on site as part of your CAFO operation. This would include, but not limited to, pesticides, herbicides, animal dips, disinfectants, etc. Specify the method of disposal for each chemical/contaminant.

7. Best Management Practice (BMPs). Describe the BMPs used to control runoff of pollutants from the production area, and land application area. Please note that “production area” means that part of a CAFO that includes the animal confinement area, the manure storage area, the raw materials storage area, and the waste containment areas. The “animal confinement area” includes but is not limited to open lots, housed lots, feedlots, confinement houses, stall barns, animal walkways, and stables. The “manure storage area” includes but is not limited to lagoons, runoff ponds, storage sheds, stockpiles, under house or pit storages, liquid impoundments, static piles, and composting piles. The “raw material storage area” includes but is not limited to feed silos, silage bunkers, and bedding materials. The “waste containment area” includes but is not limited to settling basins, and areas within berms and diversions which separate uncontaminated storm water. Also included in the definition of production area is any egg washing or egg processing facility, and any area used in the storage, handling, treatment, or disposal of mortalities. If you transfer all of the wastes your CAFO produces, and do not land apply any of it to ground under your operational control, then you will not have any land application area BMPs to describe.

#### **Section E – Land Application:**

If all of the manure produced at your facility will be transferred to other persons for use in areas beyond your operational control, then you do not need to provide the information requested in Section E. of this form.

#### *Photos and/or maps:*

Manure /waste handling and nutrient management restrictions that must be on the photo/map include buffers and setbacks around state surface waters, well heads, etc.

#### *Nutrient Management and Waste Utilization via Land Application:*

The purpose for having two options is to allow the producer to make use of the valuable technical assistance provided by the USDA’s Natural Resources Conservation (NRCS), if you should desire.

#### *Land Application Equipment Calibration:*

Land application equipment calibration is essential to ensuring that nutrients are being applied at agronomic rates. Please provide specific information on how equipment will be calibrated. The CAFO shall maintain the supporting documentation on site and shall make this information available to DEQ upon request.

*Manure sampling and Analysis:* Manure must be sampled per ARM 17.30.1334.

When sending manure or soil samples to a laboratory for analysis, it is your responsibility to make sure that the lab uses the correct sampling procedures. Approved Laboratories can be found in Montana State University Extension Service Publication 4449-1, Soil Sampling and Laboratory Selection, June 2005. Before you take any samples, talk to the lab that you intend to use. Ask them if they have specific instructions in order to help ensure

that the analysis results you get are as accurate as possible. If they do, then you must follow their instructions in order to help ensure that the analysis results you get are as accurate as possible.

Linear Approach Nutrient budget work Sheet. You will most likely need to fill out multiple photocopies of the nutrient budget work sheet.

Line 1 Enter in the planned crop nutrient needs in pounds per acre from <http://deq.mt.gov/wqinfo/mpdes/cafo.mcp> MSU EB 161.

Line 2 Enter the credits from previous legume crop pounds per acre. See <http://deq.mt.gov/wqinfo/mpdes/cafo.mcp> for Legume crop credits.

Line 3 Enter nutrient credits from second year manure applications pounds per acre. See <http://deq.mt.gov/wqinfo/mpdes/cafo.mcp> for mineralization rate

Line 4 Enter nutrients supplied by commercial fertilizer in pounds per acre. This can be starter or other fertilizer that is applied prior to manure application.

Line 5 Enter nutrients supplied by any irrigation water in pounds per acre.

Line 6 Subtract lines 2 through 5 from line 1 and enter in the space provided

Line 7 Enter in the nitrogen or phosphorus from sample taken of manure or process waste water within the last year.

Line 8 Enter in the Nutrient Availability Factor. See <http://deq.mt.gov/wqinfo/mpdes/cafo.mcp> for Nitrogen Availability factor. Enter 1 for phosphorus.

#### ***Section F – Certification:***

If Form NMP is filled out by one person and signed by another, the person signing the document should read it thoroughly. Always retain a copy of each of the documents that you send to the Department.

If you have any questions concerning how to fill out this form, or other forms related to the Montana Pollutant Discharge Elimination System (MPDES) discharge permitting program, please contact the Department's Water Protection Bureau at:

Phone: (406) 444-3080  
Fax: (406) 444-1374  
1520 East Sixth Avenue  
P.O. Box 200901  
Helena, MT 59620-0901

**Appendix A: Phosphorus Index Worksheet (Complete for each field and crop)**

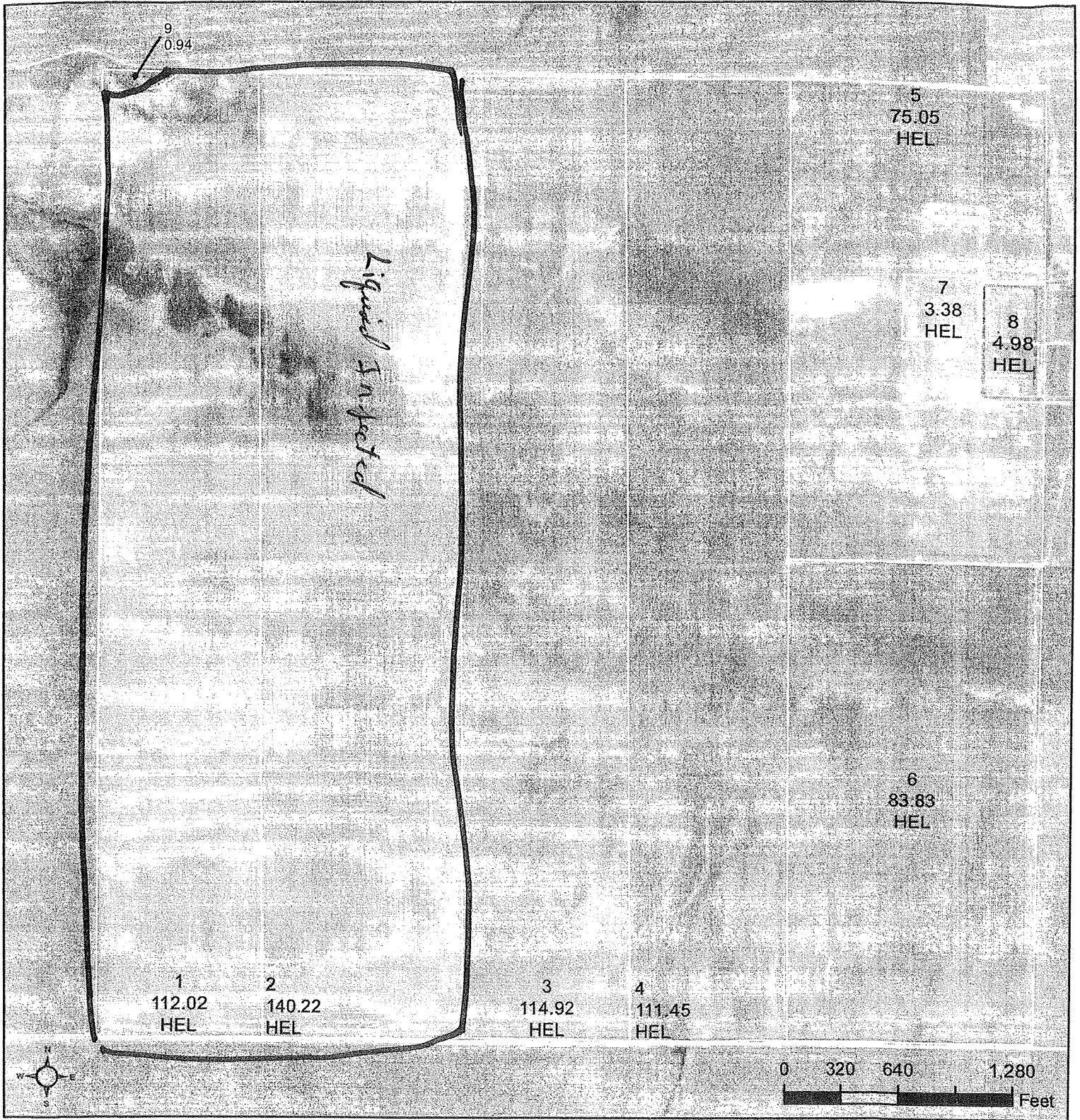
Field:		Crop:			Year:				
Field Category Factor	None (0)	Low (1)	Medium (2)	High (4)	Very High (8)	Risk Value (0,1,2,4,8)	Weight Factor	Weight Risk	
Soil Erosion	NA	<5 tons/as/yr	5-10 ton/ac/yr	10-15 tons/ac/yr	QA> 10 for erodible soils		X 1.5		
Furrow Irrigation Erosion	N/A	Tail water recovery, QS>6 very erodible soils, or QS>10 other soils	QS> for erosion resistant soil	QS> for erodible soils	QA>6 for very erodible soils		X 1.5		
Sprinkler Irrigation Erosion	All fields 0-3% slope, all sandy fields or field evaluation indicates little or no runoff large spray on silts 3-8%	Medium spray on silty soils 3-15% slopes, large spray on silty soils 8-15% slope, low spray on silt soils 3-8% large spray on clay soil 3-15% slope	Medium spray on clay soils 3-8% slopes, large spray on clay soils >15% slope, medium spray on silt soil >15% slope	Medium spray on clay soils >8% slope, low spray on clay soil 3-8% slope, low spray on silty soils >15% slopes	Low spray on clay soils >8% slopes		X 1.5		
Runoff Class	Negligible	Very Low or Low	Medium	High	Very High		X 0.5		
Olson Soil Test P	-----	<20 ppm	20-40 ppm	40-80 ppm	>80 ppm		X 0.5		
Commercial P Fertilizer Application Method	None Applied	Placed with Planter or injection deeper than 2 inches	Incorporated <3 months prior to planting or surface applied during growing season	Incorporated >3 months before crop or surface applied <3 months before crop emerges	Surface applied to pasture or >3 months before crop emerges		X 1.0		
Commercial P Fertilizer Application Rate	None Applied	<30 lbs/ac P205	31-90 lbs/ac P205	91-150 lbs/ac P205	>150 lbs/ac P205		X 1.0		
Organic P Source Application Method	None Applied	Injected deeper than 2 inches	Incorporated <3 months prior to planting or surface applied during growing season	Incorporated >3 months before crop or surface applied <3 months before crop.	Surface applied to pasture or >3 months before crop emerges		X 1.0		
Organic P Source Application Rate	None Applied	<30 lbs/ac P205	31-90 lbs/ac P205	91-150 lbs/ac P205	>150 lbs/ac P205		X 1.0		
Distance to Concentrated Surface Water Flow	>1,000 feet	200-1,000 feet, or functioning grass waterways in concentrated surface water	100-200 feet	<100 feet	0 feet or application are directly into concentrated surface water flow areas.		X 1.0		
<b>Total Phosphorus Index Value:</b>									





United States  
Department of  
Agriculture

# Golden Valley County, Montana



## Common Land Unit

Cropland    Rangeland    Other Use

Conservation Reserve Program

## Wetland Determination Identifiers

- Restricted Use
- ▽ Limited Restrictions
- Exempt from Conservation Compliance Provisions

2014 Program Year

Map Created September 11, 2013

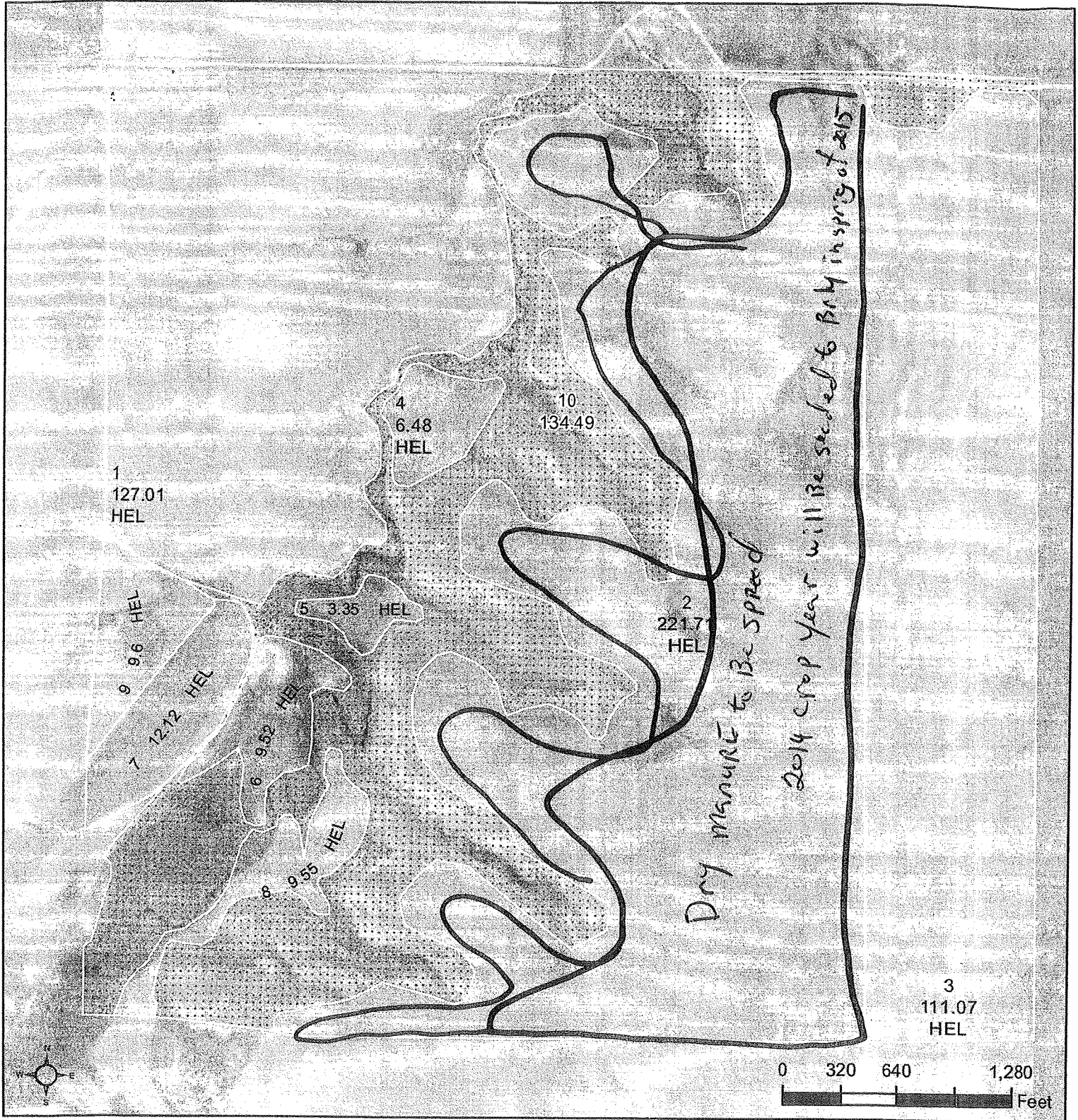
**Farm 1110**  
**Tract 1137**  
**24-6N-19E**

United States Department of Agriculture (USDA) Farm Service Agency (FSA) maps are for FSA Program administration only. This map does not represent a legal survey or reflect actual ownership; rather it depicts the information provided directly from the producer and/or National Agricultural Imagery Program (NAIP) imagery. The producer accepts the data 'as is' and assumes all risks associated with its use. USDA-FSA assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data outside FSA Programs. Wetland identifiers do not represent the size, shape, or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact boundaries and determinations or contact USDA Natural Resources Conservation Service (NRCS).



United States  
Department of  
Agriculture

## Golden Valley County, Montana



### Common Land Unit

Cropland Rangeland Other Use

Conservation Reserve Program

### Wetland Determination Identifiers

- Restricted Use
- Limited Restrictions
- Exempt from Conservation Compliance Provisions

2014 Program Year

Map Created September 11, 2013

Farm 1110  
Tract 1140  
27-6N-19E

United States Department of Agriculture (USDA) Farm Service Agency (FSA) maps are for FSA Program administration only. This map does not represent a legal survey or reflect actual ownership; rather it depicts the information provided directly from the producer and/or National Agricultural Imagery Program (NAIP) imagery. The producer accepts the data 'as is' and assumes all risks associated with its use. USDA-FSA assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data outside FSA Programs. Wetland identifiers do not represent the size, shape, or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact boundaries and determinations or contact USDA Natural Resources Conservation Service (NRCS).



**Appendix A: Phosphorus Index Worksheet (Complete for each field and crop)**

Field: <i>WC-1 24-6-19</i> Crop: <i>Briy</i> Year: <i>2014</i>								
Field Category Factor	None (0)	Low (1)	Medium (2)	High (4)	Very High (8)	Risk Value (0,1,2,4,8)	Weight Factor	Weight Risk
Soil Erosion	NA	<5 tons/as/yr	5-10 ton/ac/yr	10-15 tons/ac/yr	QA> 10 for erodible soils	<i>1</i>	X 1.5	<i>1.5</i>
Furrow Irrigation Erosion	N/A	Tail water recovery, QS>6 very erodible soils, or QS>10 other soils	QS> for erosion resistant soil	QS> for erodible soils	QA>6 for very erodible soils		X 1.5	
Sprinkler Irrigation Erosion	All fields 0-3% slope, all sandy fields or field evaluation indicates little or no runoff large spray on silts 3-8%	Medium spray on silty soils 3-15% slopes, large spray on silty soils 8-15% slope, low spray on silt soils 3-8% large spray on clay soil 3-15% slope	Medium spray on clay soils 3-8% slopes, large spray on clay soils >15% slope, medium spray on silt soil >15% slope	Medium spray on clay soils >8% slope, low spray on clay soil 3-8% slope, low spray on silty soils >15% slopes	Low spray on clay soils >8% slopes		X 1.5	
Runoff Class	Negligible	Very Low or Low	Medium	High	Very High	<i>1</i>	X 0.5	<i>.5</i>
Olson Soil Test P	-----	<20 ppm	20-40 ppm	40-80 ppm	>80 ppm	<i>4</i>	X 0.5	<i>2</i>
Commercial P Fertilizer Application Method	None Applied	Placed with Planter or injection deeper than 2 inches	Incorporated <3 months prior to planting or surface applied during growing season	Incorporated >3 months before crop or surface applied <3 months before crop emerges	Surface applied to pasture or >3 months before crop emerges	<i>1</i>	X 1.0	<i>1</i>
Commercial P Fertilizer Application Rate	None Applied	<30 lbs/ac P205	31-90 lbs/ac P205	91-150 lbs/ac P205	>150 lbs/ac P205	<i>1</i>	X 1.0	<i>1</i>
Organic P Source Application Method	None Applied	Injected deeper than 2 inches	Incorporated <3 months prior to planting or surface applied during growing season	Incorporated >3 months before crop or surface applied <3 months before crop.	Surface applied to pasture or >3 months before crop emerges	<i>1</i>	X 1.0	<i>1</i>
Organic P Source Application Rate	None Applied	<30 lbs/ac P205	31-90 lbs/ac P205	91-150 lbs/ac P205	>150 lbs/ac P205	<i>1</i>	X 1.0	<i>1</i>
Distance to Concentrated Surface Water Flow	>1,000 feet	200-1,000 feet, or functioning grass waterways in concentrated surface water	100-200 feet	<100 feet	0 feet or application are directly into concentrated surface water flow areas.	<i>0</i>	X 1.0	
Total Phosphorus Index Value:								<i>8</i>

# Nutrient Budget Worksheet

Field identification: <i>FL 12-5</i> Year: <i>2015</i> Crop: <i>WW</i>					
Expected Crop Yield: <i>50 bu/ac</i>					
Phosphorus index results or Phosphorus application from soil test: <i>12 ppm</i>					
Method of Application: <i>injection</i>					
When will application occur: <i>Mar 2015</i>					
Nutrient Budget			Nitrogen-based Application	Phosphorus-based Application	Source of information
1		Crop Nutrient Needs, lbs/acre	<i>180</i>		<i>Soil test</i>
2	(-)	Credits from previous legume crops, lbs/ac			
3	(-)	Residuals from past manure production lbs/acre			
4	(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre	<i>60</i>		
5	(-)	Nutrients supplied in irrigation water, lbs/acre			
6		= Additional Nutrients Needed, lbs/acre	<i>120</i>		
7		Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1000 gal (from manure test)	<i>9.2</i>		<i>manure test</i>
8	(x)	Nutrient Availability factor, for Phosphorus based application use 1.0	<i>0.9</i>		
9		= Available Nutrients in Manure, lbs/ton or lbs/1000 gal	<i>8.3</i>		
10		Additional Nutrients needed, lbs/acre (calculated above)	<i>120</i>		
11	(/)	Available Nutrients in Manure, lbs/ton or lbs/1000 gal (calculated above)	<i>8.3</i>		
12		= Manure Application Rate, tons/acre or 1000 gal/acre	<i>14000</i>		

Comments:

# Nutrient Budget Worksheet

Field identification: *FL 12-5* Year: *2015* Crop: *WW*

Expected Crop Yield: *50 bu/ac*

Phosphorus index results or Phosphorus application from soil test: *12 ppm*

Method of Application: *injection*

When will application occur: *Mar 2015*

Nutrient Budget			Nitrogen-based Application	Phosphorus-based Application	Source of information
1		Crop Nutrient Needs, lbs/acre	180		Soil test
2	(-)	Credits from previous legume crops, lbs/ac			
3	(-)	Residuals from past manure production lbs/acre			
4	(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre	60		
5	(-)	Nutrients supplied in irrigation water, lbs/acre			
6		= <b>Additional Nutrients Needed, lbs/acre</b>	120		
7		Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1000 gal (from manure test)	9.2		manure test
8	(x)	Nutrient Availability factor, for Phosphorus based application use 1.0	0.9		
9		= <b>Available Nutrients in Manure, lbs/ton or lbs/1000 gal</b>	8.3		
10		Additional Nutrients needed, lbs/acre (calculated above)	120		
11	(/)	Available Nutrients in Manure, lbs/ton or lbs/1000 gal (calculated above)	8.3		
12		= <b>Manure Application Rate, tons/acre or 1000 gal/acre</b>	14000		

Comments:

## Nutrient Budget Worksheet

Field identification: WC3-5246N Year: 2014 Crop: Barley

Expected Crop Yield: 60

Phosphorus index results or Phosphorus application from soil test: 17 B Medium

Method of Application: Spreader

When will application occur: Sept/Oct 2013

Nutrient Budget			Nitrogen-based Application	Phosphorus-based Application	Source of information
1		Crop Nutrient Needs, lbs/acre	96 lb/a	10 lb/ac	MSU Extension EB 1b1 ↓
2	(-)	Credits from previous legume crops, lbs/ac	10 lb/a	—	
3	(-)	Residuals from past manure production lbs/acre	—	—	4th yr after manure application
4	(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre			
5	(-)	Nutrients supplied in irrigation water, lbs/acre	—		
6		= Additional Nutrients Needed, lbs/acre	86 lb/a		
7		Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1000 gal (from manure test)	24	24.3	Manure test
8	(x)	Nutrient Availability factor, for Phosphorus based application use 1.0	0.6	—	
9		= Available Nutrients in Manure, lbs/ton or lbs/1000 gal	14.4 lb/ac		
10		Additional Nutrients needed, lbs/acre (calculated above)	86 lb/a		
11	(/)	Available Nutrients in Manure, lbs/ton or lbs/1000 gal (calculated above)	14.4 lb/ac		
12		= Manure Application Rate, tons/acre or 1000 gal/acre	6 ton/ac		

Comments:

# Nutrient Budget Worksheet

Field identification: EC 8-9-10 Year: 2015 Crop: S. wheat					
Expected Crop Yield: 40					
Phosphorus index results or Phosphorus application from soil test: 24					
Method of Application: Shank Injection					
When will application occur: October 2014					
Nutrient Budget			Nitrogen-based Application	Phosphorus-based Application	Source of information
1		Crop Nutrient Needs, lbs/acre	160		
2	(-)	Credits from previous legume crops, lbs/ac			
3	(-)	Residuals from past manure production lbs/acre			
4	(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre	60		
5	(-)	Nutrients supplied in irrigation water, lbs/acre			
6		= Additional Nutrients Needed, lbs/acre	100		
7		Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1000 gal (from manure test)	9.2		
8	(x)	Nutrient Availability factor, for Phosphorus based application use 1.0	0.9		
9		= Available Nutrients in Manure, lbs/ton or lbs/1000 gal	8.3		
10		Additional Nutrients needed, lbs/acre (calculated above)	100		
11	(/)	Available Nutrients in Manure, lbs/ton or lbs/1000 gal (calculated above)	8.3		
12		= Manure Application Rate, tons/acre or 1000 gal/acre	12060 gal/acre		

Comments:

# Nutrient Budget Worksheet

Field identification: <u>R-2</u> Year: <u>2015</u> Crop: <u>w. wheat</u>					
Expected Crop Yield: <u>50</u>					
Phosphorus index results or Phosphorus application from soil test: <u>16</u>					
Method of Application: <u>Dry Spreader will incorporate when finished</u>					
When will application occur: <u>October 2013 + June-July 2014</u>					
Nutrient Budget			Nitrogen-based Application	Phosphorus-based Application	Source of information
1		Crop Nutrient Needs, lbs/acre	<u>180</u>		
2	(-)	Credits from previous legume crops, lbs/ac			
3	(-)	Residuals from past manure production lbs/acre			
4	(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre	<u>60</u>		
5	(-)	Nutrients supplied in irrigation water, lbs/acre			
6		= <b>Additional Nutrients Needed, lbs/acre</b>	<u>120</u>		
7		Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1000 gal (from manure test)	<u>16.6</u>		
8	(x)	Nutrient Availability factor, for Phosphorus based application use 1.0	<u>0.5</u>		
9		= <b>Available Nutrients in Manure, lbs/ton or lbs/1000 gal</b>	<u>8.3</u>		
10		Additional Nutrients needed, lbs/acre (calculated above)	<u>120</u>		
11	(/)	Available Nutrients in Manure, lbs/ton or lbs/1000 gal (calculated above)			
12		= <b>Manure Application Rate, tons/acre or 1000 gal/acre</b>	<u>14 ton/acre</u>		

Comments:

# Nutrient Budget Worksheet

Field identification: WC1		Year: 2014	Crop: Spring Wheat		
Expected Crop Yield: 40 Bu/Ac					
Phosphorus index results or Phosphorus application from soil test: 46 ppm					
Method of Application: Injection					
When will application occur: October 2013					
Nutrient Budget			Nitrogen-based Application	Phosphorus-based Application	Source of information
1		Crop Nutrient Needs, lbs/acre	160	25	soil test
2	(-)	Credits from previous legume crops, lbs/ac	0	0	
3	(-)	Residuals from past manure production lbs/acre	0	0	
4	(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre	60	0	soil test
5	(-)	Nutrients supplied in irrigation water, lbs/acre	0	0	
6		= <b>Additional Nutrients Needed, lbs/acre</b>	100	25	
7		Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1000 gal (from manure test)	9.2	0.8	manure test
8	(x)	Nutrient Availability factor, for Phosphorus based application use 1.0	0.9	1	
9		= <b>Available Nutrients in Manure, lbs/ton or lbs/1000 gal</b>	8.3	0.8	
10		Additional Nutrients needed, lbs/acre (calculated above)	100	25	
11	(/)	Available Nutrients in Manure, lbs/ton or lbs/1000 gal (calculated above)	8.3	0.8	
12		= <b>Manure Application Rate, tons/acre or 1000 gal/acre</b>	12000	30000	

## Comments:

The Phosphorous levels in the produced wastewater is very low.

# Nutrient Budget Worksheet

Field identification: WC2			Year: 2014	Crop: Spring Wheat	
Expected Crop Yield: 40 Bu/Ac					
Phosphorus index results or Phosphorus application from soil test: 50 ppm					
Method of Application: Injection					
When will application occur: October 2013					
Nutrient Budget			Nitrogen-based Application	Phosphorus-based Application	Source of information
1		Crop Nutrient Needs, lbs/acre	160	25	soil test
2	(-)	Credits from previous legume crops, lbs/ac	0	0	
3	(-)	Residuals from past manure production lbs/acre	0	0	
4	(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre	90	0	soil test
5	(-)	Nutrients supplied in irrigation water, lbs/acre	0	0	
6		= Additional Nutrients Needed, lbs/acre	70	25	
7		Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1000 gal (from manure test)	9.2	0.8	manure test
8	(x)	Nutrient Availability factor, for Phosphorus based application use 1.0	0.9	1	
9		= Available Nutrients in Manure, lbs/ton or lbs/1000 gal	8.3	0.8	
10		Additional Nutrients needed, lbs/acre (calculated above)	70	25	
11	(/)	Available Nutrients in Manure, lbs/ton or lbs/1000 gal (calculated above)	8.3	0.8	
12		= Manure Application Rate, tons/acre or 1000 gal/acre	8500	30000	

## Comments:

The Phosphorous levels in the produced wastewater is very low.



# Nutrient Budget Worksheet

Field identification: FC 16      Year: 2014      Crop: Spring Wheat

Expected Crop Yield: 40 Bu/Ac

Phosphorus index results or Phosphorus application from soil test: 6 ppm

Method of Application: Injection

When will application occur: October 2013

Nutrient Budget			Nitrogen-based Application	Phosphorus-based Application	Source of information
1		Crop Nutrient Needs, lbs/acre	160	40	soil test
2	(-)	Credits from previous legume crops, lbs/ac	0	0	
3	(-)	Residuals from past manure production lbs/acre	0	0	
4	(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre	60	0	soil test
5	(-)	Nutrients supplied in irrigation water, lbs/acre	0	0	
6		<b>= Additional Nutrients Needed, lbs/acre</b>	100	40	
7		Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1000 gal (from manure test)	9.2	0.8	manure test
8	(x)	Nutrient Availability factor, for Phosphorus based application use 1.0	0.9	1	
9		<b>= Available Nutrients in Manure, lbs/ton or lbs/1000 gal</b>	8.3	0.8	
10		Additional Nutrients needed, lbs/acre (calculated above)	100	40	
11	(/)	Available Nutrients in Manure, lbs/ton or lbs/1000 gal (calculated above)	8.3	0.8	
12		<b>= Manure Application Rate, tons/acre or 1000 gal/acre</b>	12000 <i>gal/acre</i>	30000	

## Comments:

The Phosphorous levels in the produced wastewater is very low.

## Results of Deep Soil Analysis for Dryland

Grower: **Golden Valley Colony**Field: **West Colony #1**

Field 1 of 3

Date Sampled:

Acres: **112.9**Date Received: **9/25/2013**

Dealer:

Previous Crop: **WW; Fall manure app**

Date Sent:

Acct:

Next Crop: **Sp Wheat & Feed Barley**

Invoice:

Lab No.	Depth	OM %	NO3-N lbs/ac	Phos. ppm	K ppm	SO4-S ppm	Soil pH	Salt Haz.	Zinc	Iron	Cu	Mn	Boron
S-15	0 - 6	2.3	37	46	417	8	7.7	0.5					
2913	6 - 24		20			5							
2914	24 - 42		30										
2915													

87.4

Depth	PAW In	Text.	Lime
0 - 6	0.4	VFSL	M-
6 - 24	0.5	VFSL	M
24 - 42	1.1	VFSL	M

2.0

MSU method for N assume 30 lbs/a  
from OM and a protein 14%.

Yield Based On Available Water			
Next Crop	SW	Fd Bly	
H2O in Soil	2.0	2.0	
Est Rainfall	7.0	7.0	
Total Avail H2O	9.0	9.0	
Yield on Dryland			
Total Avail H2O	9.0	9.0	
- H2O first unit	4.0	3.0	
H2O for Yield	5.0	6.0	
x (Prod / Inch)	6.0	8.0	
Yield on dryland	30	48	

N Budget Analysis		
Next Crop	SW	Fd Bly
Anticipated Yield	40	60
Yield Factor N	3.3	1.6
N Required	132	96
N 2ft (100%)	57	57
N 4ft (40%)	0	0
Org N released	5	5
N from manure		
N from legume	0	0
Other		
N in Soil	62	62
N straw tie up	30	30
N Protein Goal		
Add'l N Req'd	30	30
Act N Available	32	32
Adq N to Produce	19	39
N Suggested	100	64

Cation-exchange Capacity (CEC) =			
Ca	Mg	K	Na
ppm		417	20
meq/100		1.07	0.09
% Sat			

P Suggested			
Next Crop	SW	Fd Bly	
	Opt 1	Opt 2	Opt 3
P Available	46	46	46
P Suggested	0/30	0/30	0

Summary of N Budget Analysis			
Next Crop	SW	Fd Bly	
	Opt 1	Opt 2	Opt 3
Anticipated Yield	40	60	0
N Required	132	96	0
Act N Available	32	32	0
N Suggested	100	64	0

Option 1 Fertilizer Suggested				
SW	Yield Goal: 40			
	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other
N	100	100	5	
P205	0/30	0	25	
K20	0	0	0	
S	20	20	0	

Option 2 Fertilizer Suggested				
Fd Bly	Yield Goal: 60			
	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other
N	64	70	5	
P205	0/30	0	25	
K20	0	0	0	
S	20	20	0	

Option 3 Fertilizer Suggested				
	Yield Goal: 0			
	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other
N	0	0	0	
P205	0	0	0	
K20	0	0	0	
S	0.0	0	0	

## Results of Deep Soil Analysis for Dryland

Grower: **Golden Valley Colony**

Field: **West Colony #2**

Field **2** of **3**

Date Sampled:

Acres: **138.8**

Date Received: **9/25/2013**

Dealer:

Previous Crop: **Barley; Fall manure app**

Date Sent:

Acct:

Next Crop: **Sp Wheat & Feed Barley**

Invoice:

Lab No.	Depth	OM %	NO3-N lbs/ac	Phos. ppm	K ppm	SO4-S ppm	Soil pH	Salt Haz	Zinc	Iron	Cu	Mn	Boron
S-15	0 - 6	2.3	64	50	388	5	7.5	0.6					
2916	6 - 24		20			5							
2917	24 - 42		21										
2918													

105.3

Depth	PAW In	Text.	Lime
0 - 6	0.4	FSL	M-
6 - 24	0.7	FSL	M
24 - 42	1.2	L	M

2.3

MSU method for N assume 30 lbs/a from OM and a protein 14%.

Yield Based On Available Water			
Next Crop	SW	Fd Bly	
H2O in Soil	2.3	2.3	
Est Rainfall	7.0	7.0	
Total Avail H2O	9.3	9.3	
Yield on Dryland			
Total Avail H2O	9.3	9.3	
- H2O first unit	4.0	4.0	
H2O for Yield	5.3	5.3	
x (Prod / Inch)	6.0	6.0	
Yield on dryland	32	32	

N Budget Analysis		
Next Crop	SW	Fd Bly
Anticipated Yield	40	60
Yield Factor N	3.3	1.6
N Required	132	96
N 2ft (100%)	84	84
N 4ft (40%)	0	0
Org N released	5	5
N from manure		
N from legume	0	0
Other		
N in Soil	89	89
N straw tie up	30	30
N Protein Goal		
Add'l N Req'd	30	30
Act N Available	59	59
Adq N to Produce	27	55
N Suggested	73	37

Cation-exchange Capacity (CEC) =			
Ca	Mg	K	Na
ppm		388	34
meq/100		1.0	0.15
% Sat			

P Suggested			
Next Crop	SW	Fd Bly	
	Opt 1	Opt 2	Opt 3
P Available	50	50	50
P Suggested	0/30	0/30	0

Summary of N Budget Analysis			
Next Crop	SW	Fd Bly	
	Opt 1	Opt 2	Opt 3
Anticipated Yield	40	60	0
N Required	132	96	0
Act N Available	59	59	0
N Suggested	73	37	0

Option 1 Fertilizer Suggested				
SW	Yield Goal: 40			
	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other
N	73	70	5	
P2O5	0/30	0	25	
K2O	0	0	0	
S	25	25	0	

Option 2 Fertilizer Suggested				
Fd Bly	Yield Goal: 60			
	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other
N	37	35	5	
P2O5	0/30	0	25	
K2O	0	0	0	
S	25	25	0	

Option 3 Fertilizer Suggested				
	Yield Goal: 0			
	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other
N	0	0	0	
P2O5	0	0	0	
K2O	0.0	0	0	
S	0.0	0	0	

## Results of Deep Soil Analysis for Dryland

Grower: **Golden Valley Colony**

Field: **Fish Creek 16**

Field **3** of **3**

Date Sampled:

Acres: **59.3**

Date Received: **9/25/2013**

Dealer:

Previous Crop: **WW; Fall manure app**

Date Sent:

Acct:

Next Crop: **Sp Wheat & Feed Barley**

Invoice:

Lab No.	Depth	OM %	NO3-N lbs/ac	Phos. ppm	K ppm	SO4-S ppm	Soil pH	Salt Haz	Zinc	Iron	Cu	Mn	Boron
S-15	0 - 6	1.1	4	6	152	7	8.1	0.4					
2919	6 - 24		66			4							
2920	24 - 48		17										
2921													

87.1

Depth	PAW In	Text.	Lime
0 - 6	0.4	L	M
6 - 24	0.4	L	S
24 - 48	1.4	FSL	M

2.2

MSU method for N assume 30 lbs/a from OM and a protein 14%.

Yield Based On Available Water			
Next Crop	SW	Fd Bly	
H2O in Soil	2.2	2.2	
Est Rainfall	7.0		
Total Avail H2O	9.2	2.2	
Yield on Dryland			
Total Avail H2O	9.2	2.2	
- H2O first unit	4.0	4.0	
H2O for Yield	5.2	-1.8	
x (Prod / Inch)	6.0	6.0	
Yield on dryland	31	-11	

N Budget Analysis		
Next Crop	SW	Fd Bly
Anticipated Yield	40	60
Yield Factor N	3.3	1.6
N Required	132	96
N 2ft (100%)	70	70
N 4ft (40%)	0	0
Org N released	-13	-13
N from manure		
N from legume	0	0
Other		
N in Soil	57	57
N straw tie up	30	30
N Protein Goal		
Add'l N Req'd	30	30
Act N Available	27	27
Adq N to Produce	17	36
N Suggested	105	69

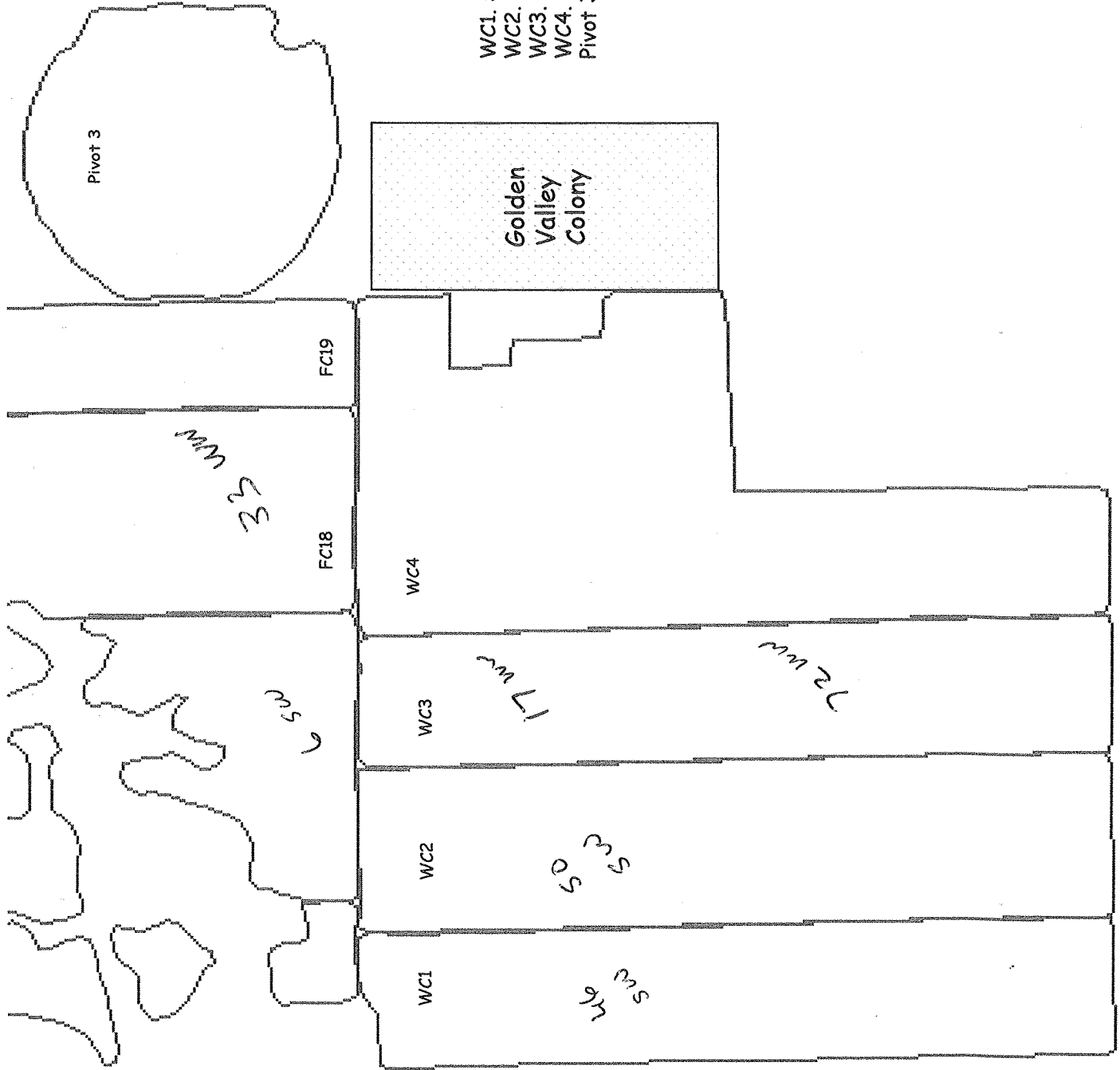
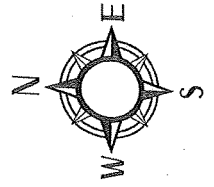
Cation-exchange Capacity (CEC) =			
Ca	Mg	K	Na
ppm		152	68
meq/100		0.4	0.30
% Sat			

P Suggested			
Next Crop	SW	Fd Bly	
	Opt 1	Opt 2	Opt 3
P Available	6	6	6
P Suggested	40	40	0

Summary of N Budget Analysis			
Next Crop	SW	Fd Bly	
	Opt 1	Opt 2	Opt 3
Anticipated Yield	40	60	0
N Required	132	96	0
Act N Available	27	27	0
N Suggested	105	69	0

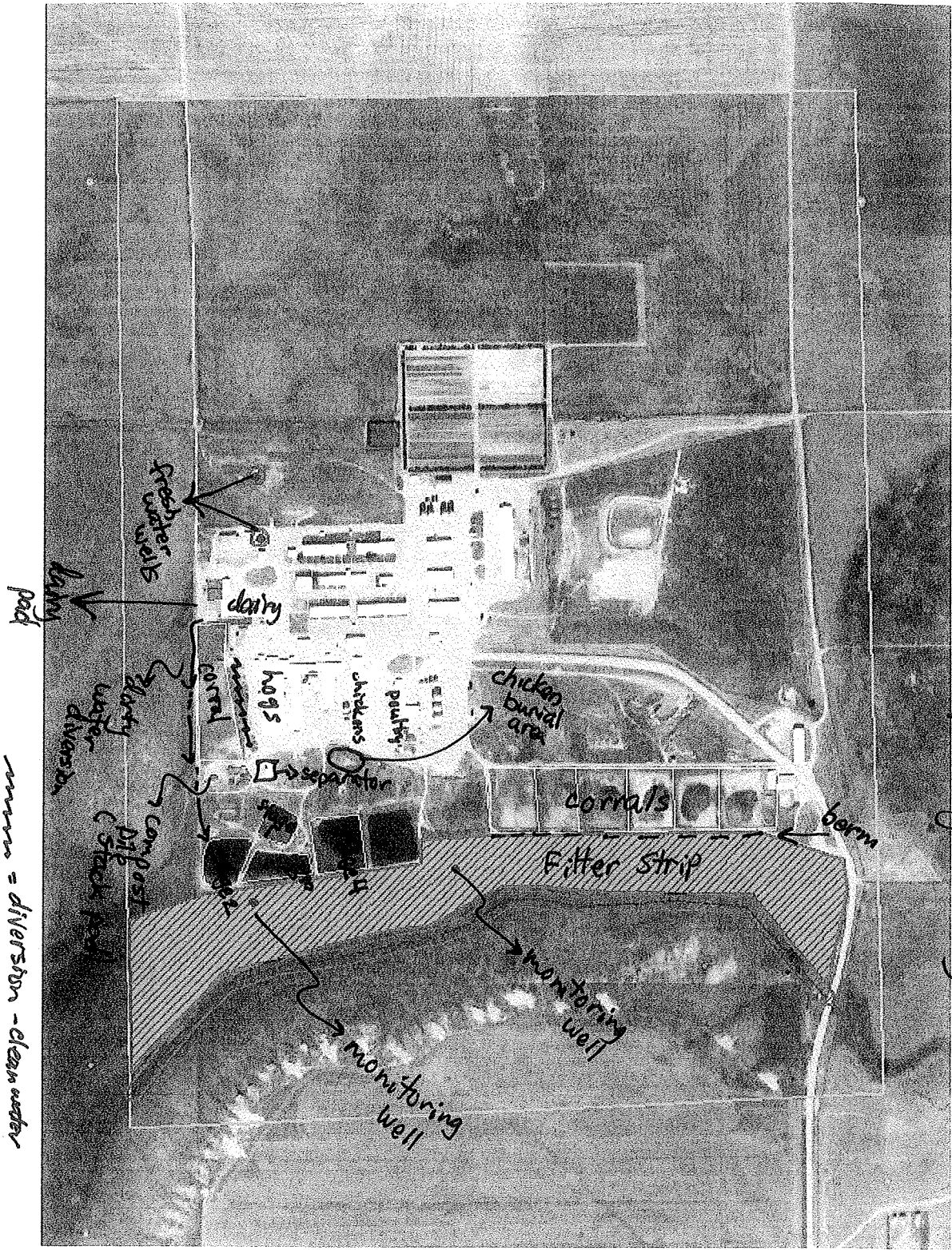
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Yield Goal: 40					Yield Goal: 60					Yield Goal: 0				
SW	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other	Fd Bly	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other	S	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other
N	105	100	10		N	69	70	10		N	0	0	0	
P2O5	40	0	50		P2O5	40	0	50		P2O5	0	0	0	
K2O	30	30	0		K2O	30	30	0		K2O	0.0	0	0	
S	20	20	0		S	20	20	0		S	0.0	0	0	

Golden Valley Colony  
 Ryegate MT  
 Golden Valley Farm  
 GPS Boundary Maps  
 GV Map 4  
 West of Colony  
 Pivot 3



WC1. Sec 24 #1 - 112.9 Acres  
 WC2. Sec 24 #2 - 138.8 Acres  
 WC3. Sec 24 #3 - 112.7 Acres  
 WC4. Sec 24 #4 - 184.0 Acres  
 Pivot 3. Sec 12 #1 - 85.0 Acres

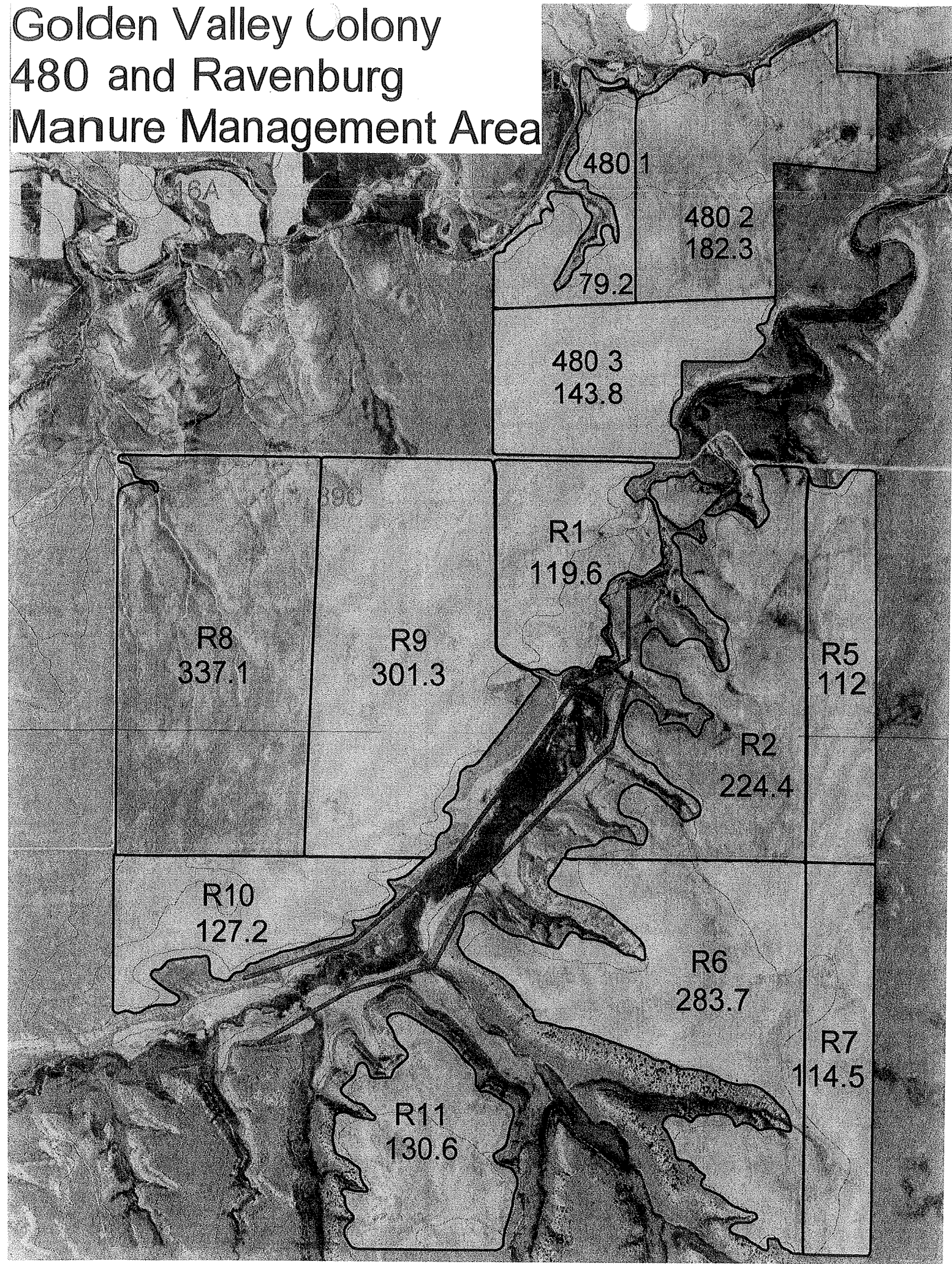
# Golden Valley Colony



--- = diversion - clean water  
 --- = berm

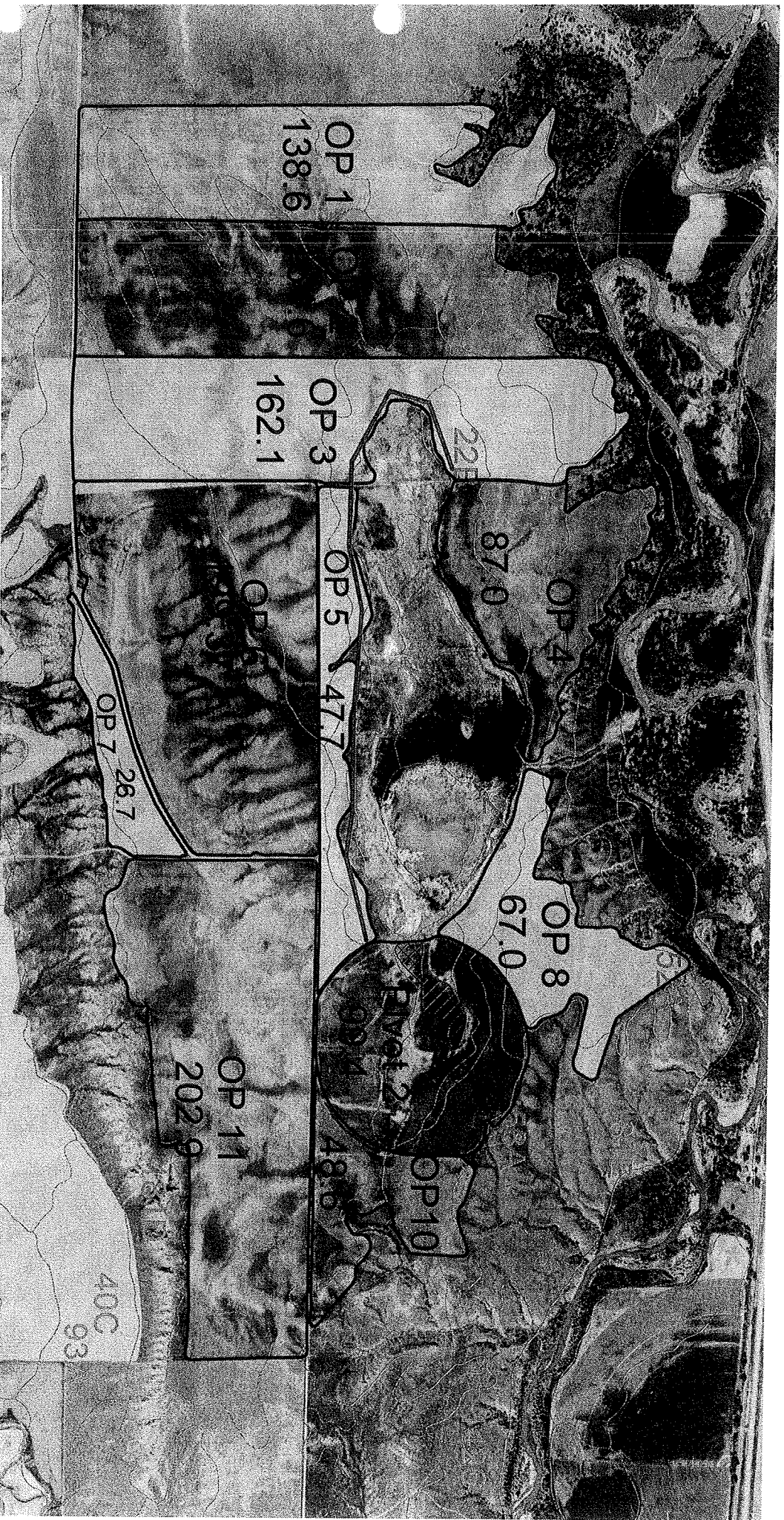


# Golden Valley Colony 480 and Ravenburg Manure Management Area

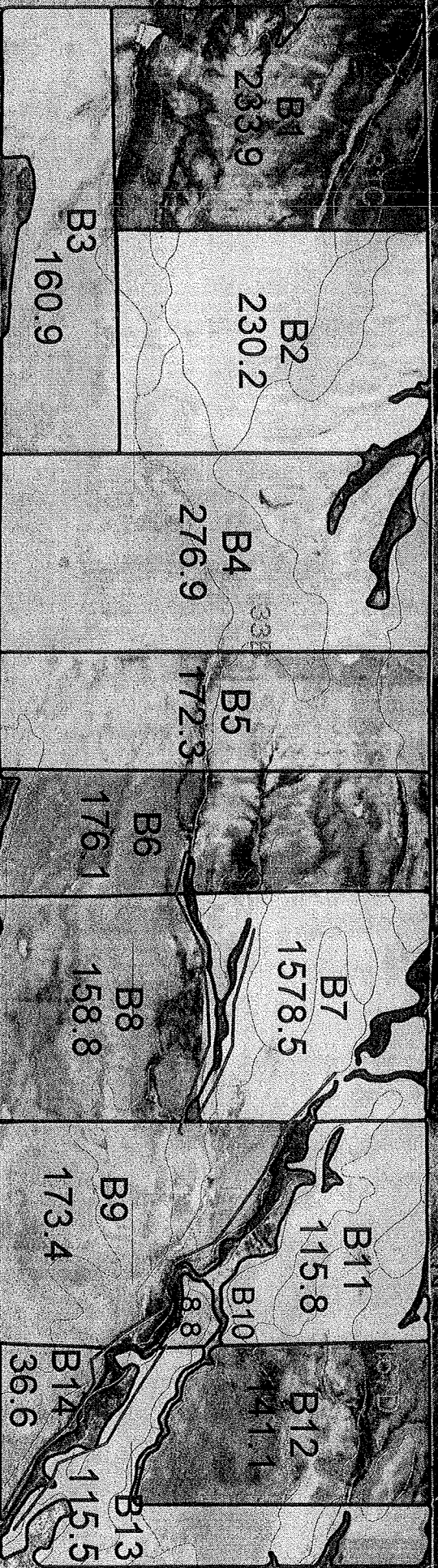




# Golden Valley Colony - Old Pivots Manure Management Areas



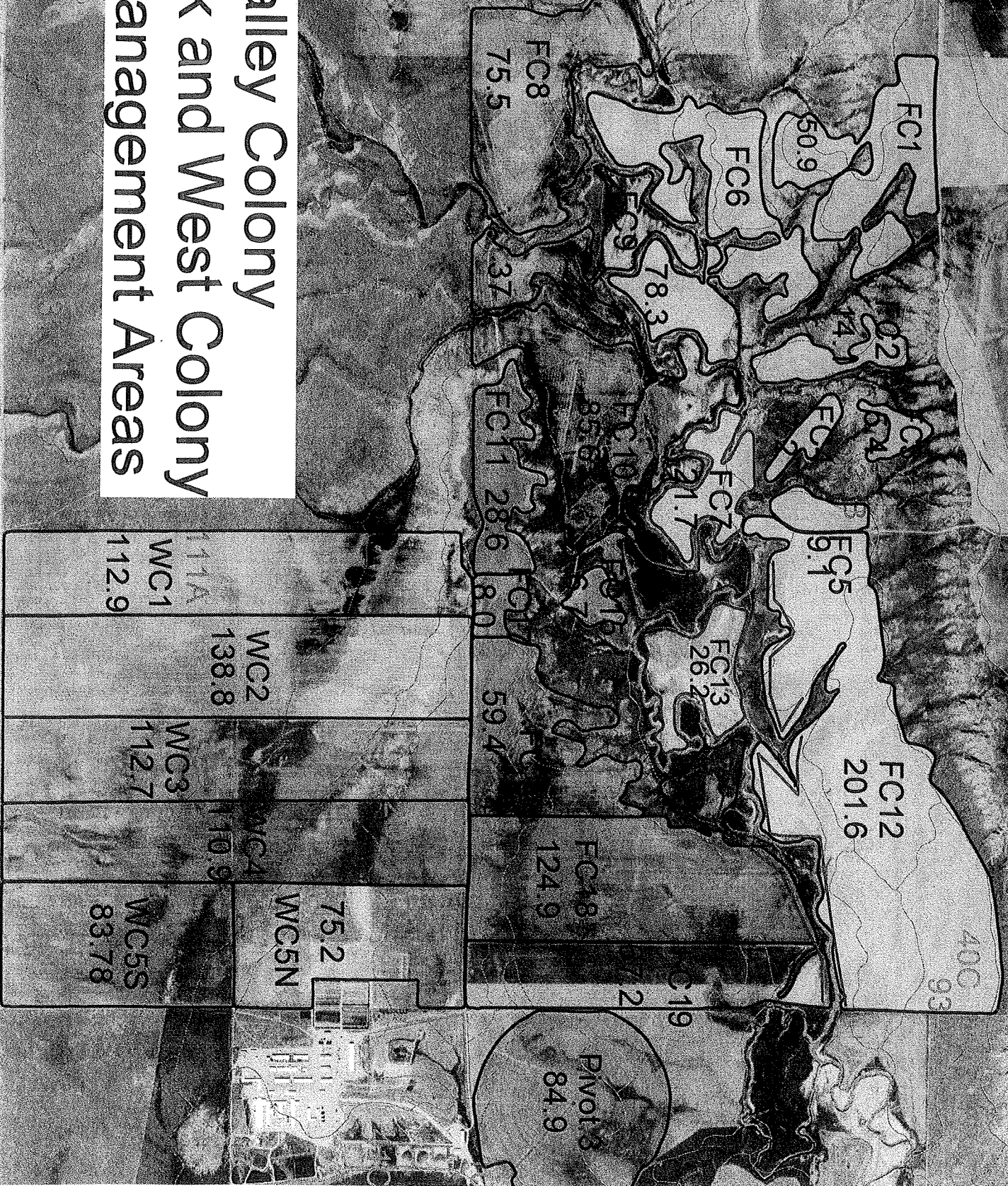




# Golden Valley Colony - Bruner Manure Management Areas



# Golden Valley Colony -ish Creek and West Colony Manure Management Areas



# B and C Ag Consulting

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Page 5 of 6

## Results of Deep Soil Analysis for Dryland

Grower: **Golden Valley Colony**

Field 5 of 6

Ryegate, MT

Field: **FC 10**

Date Sampled:

Acres: **85.6**

Date Received: **7/1/2013**

Dealer:

Previous Crop: **Chem Fallow**

Date Sent:

Acct:

Next Crop: **Winter Wheat**

Invoice:

Lab No.	Depth	OM %	NO3-N lbs/ac	Phos. ppm	K ppm	SO4-S ppm	Soil pH	Salt Haz	Zinc	Iron	Cu	Mn	Boron
S-12	0 - 6	2.3	26	24	359	>138	7.6	0.8					
4162	6 - 24		57			>138							
4163	24 - 48		86										
4164	48 - 66												
4165													
			168.6										

Depth	PAW In	Text.	Lime
0 - 6	0.6	FSL	M+
6 - 24	2.1	FSL	M+
24 - 48	2.9	FSL	M+
48 - 66	1.5	L	M+
	7.1		

MSU Method assumes 30 #/a N from OM and 14% Protein.

Yield Based On Available Water			
Next Crop	Winter Wheat		
H2O in Soil	7.1	7.1	7.1
Est Rainfall	7.0	8.0	9.0
Total Avail H2O	14.1	15.1	16.1
Yield on Dryland			
Total Avail H2O	14.1	15.1	16.1
- H2O first unit	4.0	4.0	4.0
H2O for Yield	10.1	11.1	12.1
x (Prod / Inch)	6.0	6.0	6.0
Yield on dryland	61	67	73

N Budget Analysis			
Next Crop	Winter Wheat		
Anticipated Yield	61	67	73
Yield Factor N	3.3	3.3	3.3
N Required	200	220	240
N 2ft (100%)	83	83	83
N 4ft (40%)	34	34	34
Org N released	5	5	5
N from manure			
N from legume	0	0	0
Other			
N in Soil	122	122	122
N straw tie up			
N Protein Goal			
Add'l N Req'd	0	0	0
Act N Available	122	122	122
Adq N to Produce	37	37	37
N Suggested	78	98	117

Cation-exchange Capacity (CEC) =			
Ca	Mg	K	Na
ppm		359	0
meq/100		0.9	0.9
% Sat			

P Suggested			
Next Crop	Winter Wheat		
	Opt 1	Opt 2	Opt 3
P Available	24	24	24
P Suggested	0/30	0/30	0/30

Summary of N Budget Analysis			
Next Crop	Winter Wheat		
	Opt 1	Opt 2	Opt 3
Anticipated Yield	61	67	73
N Required	200	220	240
Act N Available	122	122	122
N Suggested	78	98	117

Option 1 Fertilizer Suggested				
Winter Wheat	Yield Goal: <b>61</b>			
	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other
N	78	65	15	
P2O5	0/30	0	30	
K2O	0	0	10	
S	0	0	0	
Option 2 Fertilizer Suggested				
Winter Wheat	Yield Goal: <b>67</b>			
	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other
N	98	80	15	
P2O5	0/30	0	30	
K2O	0	0	10	
S	0	0	0	
Option 3 Fertilizer Suggested				
Winter Wheat	Yield Goal: <b>73</b>			
	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other
N	117	100	15	
P2O5	0/30	0	30	
K2O	0	0	10	
S	0	0	0	

## Results of Deep Soil Analysis for Dryland

Grower: **Golden Valley Colony**

Field **6** of **6**

Ryegate, MT

Field: **FC 9**

Date Sampled:

Acres: **37**

Date Received: **7/1/2013**

Dealer:

Previous Crop: **Chem Fallow**

Date Sent:

Acct:

Next Crop: **Winter Wheat**

Invoice:

Lab No.	Depth	OM %	NO3-N lbs/ac	Phos. ppm	K ppm	SO4-S ppm	Soil pH	Salt Haz	Zinc	Iron	Cu	Mn	Boron
S-12	0 - 6	1.4	15	15	293	>138	7.6	0.5					
4166	6 - 24		108			>138							
4167	24 - 48		84										
4168	48 - 72												
4169			207.0										

Cation-exchange Capacity (CEC) =			
Ca	Mg	K	Na
ppm		293	0
meq/100		0.8	0.2
% Sat			

Depth	PAW In	Text.	Lime
0 - 6	0.7	FSL	M-
6 - 24	2.1	L	M+
24 - 48	2.8	FSL	M
48 - 72	1.7	FSL	M
	7.3		

N Budget Analysis			
Next Crop	Winter Wheat		
Anticipated Yield	62	68	74
Yield Factor N	3.3	3.3	3.3
N Required	204	224	244
N 2ft (100%)	123	123	123
N 4ft (40%)	33	33	33
Org N released	-9	-9	-9
N from manure			
N from legume	0	0	0
Other			
N in Soil	147	147	147
N straw tie up			
N Protein Goal			
Add'l N Req'd	0	0	0
Act N Available	147	147	147
Adq N to Produce	45	45	45
N Suggested	57	76	96

P Suggested			
Next Crop	Winter Wheat		
	Opt 1	Opt 2	Opt 3
P Available	15	15	15
P Suggested	30	30	30

MSU Method assumes 30 #/a N from OM and 14% Protein.

Yield Based On Available Water			
Next Crop	Winter Wheat		
H2O in Soil	7.3	7.3	7.3
Est Rainfall	7.0	8.0	9.0
Total Avail H2O	14.3	15.3	16.3
Yield on Dryland			
Total Avail H2O	14.3	15.3	16.3
- H2O first unit	4.0	4.0	4.0
H2O for Yield	10.3	11.3	12.3
x (Prod / Inch)	6.0	6.0	6.0
Yield on dryland	62	68	74

Summary of N Budget Analysis			
Next Crop	Winter Wheat		
	Opt 1	Opt 2	Opt 3
Anticipated Yield	62	68	74
N Required	204	224	244
Act N Available	147	147	147
N Suggested	57	76	96

Option 1 Fertilizer Suggested				
Winter Wheat Yield Goal: <b>62</b>				
	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other
N	57	40	15	
P2O5	30	0	30	
K2O	30	0	15	
S	0	0	0	
Option 2 Fertilizer Suggested				
Winter Wheat Yield Goal: <b>68</b>				
	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other
N	76	60	15	
P2O5	30	0	30	
K2O	30	0	15	
S	0	0	0	
Option 3 Fertilizer Suggested				
Winter Wheat Yield Goal: <b>74</b>				
	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other
N	96	80	15	
P2O5	30	0	30	
K2O	30	0	15	
S	0	0	0	



## Results of Deep Soil Analysis for Dryland

Grower: **GVC Old Pivot and FC**

Field **7** of **9**

**Ryegate, MT**

Field: **Fish Creek 8**

Date Sampled:

Acres: **75.4**

Date Received: **7/1/2013**

Dealer:

Previous Crop: **Fallow**

Date Sent:

Acct:

Next Crop: **Winter Wheat**

Invoice:

Lab No.	Depth	OM %	NO3-N lbs/ac	Phos. ppm	K ppm	SO4-S ppm	Soil pH	Salt Haz	Zinc	Iron	Cu	Mn	Boron
S-12	0-6	1.6	27	14	356	32	7.7	0.2					
4237	0-6												
4238	6-24		33			32							
4239	24-48		64										
4240	48-72												
			124.5										

Cation-exchange Capacity (CEC) =			
Ca	Mg	K	Na
ppm		356	0
meq/100		0.9	0.1
% Sat			

Depth	PAW In	Text.	Lime
0-6	0.6	L	M
6-24	2.4	L	M-
24-48	2.8	FSL	M
48-72	2.8	L	M
8.6			

MSU Method assumes 30 #/a N from OM and 13% Protein.

Yield Based On Available Water				Org N released	-6	-6	-6	P Available	14	14	14	
Next Crop		Winter Wheat		N from manure				P Suggested	40	40	40	
H2O in Soil	8.6	8.6	8.6	N from legume	0	0	0					
Est Rainfall	7.0	8.0	9.0	Other								
Total Avail H2O	15.6	16.6	17.6	N in Soil	80	80	80	Summary of N Budget Analysis				
Yield on Dryland				N straw tie up				Next Crop		Winter Wheat		
Total Avail H2O	15.6	16.6	17.6	N Protein Goal						Opt 1	Opt 2	Opt 3
- H2O first unit	4.0	4.0	4.0	Add'l N Req'd	0	0	0	Anticipated Yield	70	76	82	
H2O for Yield	11.6	12.6	13.6	Act N Available	80	80	80	N Required	230	249	269	
x (Prod / Inch)	6.0	6.0	6.0	Adq N to Produce	24	24	24	Act N Available	80	80	80	
Yield on dryland	70	76	82	N Suggested	149	169	189	N Suggested	149	169	189	

Option 1 Fertilizer Suggested					Option 2 Fertilizer Suggested					Option 3 Fertilizer Suggested				
Winter Wheat Yield Goal: 70					Winter Wheat Yield Goal: 76					Winter Wheat Yield Goal: 82				
	Suggested lbs/ac	Preplant Topdress	Drilled Band	Other		Suggested lbs/ac	Preplant Topdress	Drilled Band	Other		Suggested lbs/ac	Preplant Topdress	Drilled Band	Other
N	149	130	15		N	169	150	15		N	189	170	15	
P2O5	40	0	40		P2O5	40	0	40		P2O5	40	0	40	
K2O	0	0	10		K2O	0	0	10		K2O	0	0	10	
S	0	0	10		S	0	0	10		S	0	0	10	

[illegible]

[illegible]

**B&C AG CONSULTANTS  
BOX 1184, BILLINGS MT 59103**

Date Sent: January 22, 2010

[illegible]

**Yield Based on Water:**

$$(2 + 7 - 3) \times 8 = 48 \text{ bu/ac}$$

Previous Crop	W Wht	Option 1	Option 2	Option 3
Desired Crop		F Bly		
Anticipated Yield		50		
Nitrogen Required		90		
Subtract avail N (2 ft)		45		
Subtract avail N (4 ft)				
O.N. released		5		
Subtract N from Manure				
Subtract N from Legume				
Subtract Others				
Add N for straw tie up		+20		
Add N for Protein Goal				
Nitrogen Suggested		60		

	Production		N Req	Soil Avail N	Adeq N to Produce	Add'l N Req	Phos ppm	Add'l Phos P205 lbs/ac
	Bu/ac	T/ac						
	50		110	50	30	60	25	0/25

**Comments:**

Option 1 Fertilizer Suggested										Option 2 Fertilizer Suggested					Option 3 Fertilizer Suggested				
Crop		Feed		Barley		Yield Goal		50 bu/ac		Crop		Yield Goal			Crop		Yield Goal		
Actual	Suggest	Preplant	Sidedress	Sidedress	Drilled	Drilled	Seeding	Direct	Seeding	Suggest	Preplant	Side	Drilled	Direct	Suggest	Preplant	Side	Drilled	Direct
lb/ac	lbs/ac	Topdress	Fertigate	Banded	Banded	Banded	Seeding	Seeding	Seeding	lbs/ac	Topdress	Topdress	Banded	Seeding	lbs/ac	Topdress	Topdress	Banded	Seeding
N	55	0			40														
P2O5	0/25	0			20														
K2O	30	0			10														
S	20	0			10														
Zn																			
Fe																			
Cu																			
Mn	Apply 150#/ac of blend but need to use 4" openers																		
B																			



